FEASIBILITY OF A MINDFULNESS-BASED INTERVENTION FOR STRESS REDUCTION AND RESILIENCE FOR MEDICAL STUDENTS AT A LARGE TEACHING HOSPITAL AND MEDICAL CAMPUS IN THE WESTERN CAPE: A RANDOMISED CONTROLLED, COMPARATIVE TRIAL WITH SUPPORTIVE COUNSELLING.

By Nicola Lindy Boyd

Thesis presented in fulfilment of the requirements for the degree Master of Philosophy in Mindfulness in the Faculty of Psychiatry at Stellenbosch University.

Supervisor: Dr Debra Alexander (PhD)

December 2021

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety or in part, submitted it for obtaining any qualification.

Date: 26 February 2021

ABSTRACT

The high levels of stress experienced by medical students is cause for concern due to the negative academic and emotional consequences both for themselves, as well as their future patients and professional careers. South Africa's context contributes additional unique stressors for South African medical students.

Research is showing that mindfulness-based interventions are effective for the treatment of psychological issues as well as of benefit to healthy individuals. Online delivery of such interventions increase accessibility for time-constrained participants. There is limited information about the potential of online mindfulness-based interventions to increase medical students' wellbeing, self-compassion and to address perceived stress.

This feasibility study aimed to provide information by investigating the effects of a six-week online, teacher-facilitated mindfulness-based intervention for medical students in comparison to supportive counselling.

An evaluative, experimental, mixed-methods design included the randomisation of 45 self-selected participants to one of two groups. Quantitative data was collected online at pre-, post- and 8-week follow up. A post-course completed feedback questionnaire, provided qualitative data to provide an understanding of participants' experience of the programmes.

Results indicated significant positive changes in both groups' wellbeing, decreased perceived stress and self-reported, enhanced stress management. Unexpectedly, a significant change in decreased self-compassion was noted over the time period. Mindfulness reflected as a statistically significant treatment effect in the mindfulness group at post-course analysis.

Based on the findings, an introduction of a stress management programme for medical students is recommended – one which includes mindfulness and stress- related psychoeducational components as part of a wider mental health strategy. A main study would contribute further information to this area and whether findings could be widened to benefit tertiary students in South Africa.

Keywords: medical students, mindfulness, online mindfulness-based interventions, wellbeing, perceived stress, self-compassion

OPSOMMING

Mediese studente se hoë stresvlakke is kommerwekkend as gevolg van die negatiewe akademiese en emosionele nagevolge vir hulself en hul toekomstige pasiënte en professionele loopbane. Die Suid Afrikaanse verband dra by tot onge-weewenaarde addisionale stres vir Suid Afrikaanse mediese studente.

Navorsing dui daarop dat bewustheidgebaseerde intervensies effektief is vir die behandeling van sielkundige probleme, maar ook voordelig is vir gesonde individue. Boonop verhoog die aanlynaanbieding van hierdie intervensies toeganklikheid vir deelnemers met tydsbeperkinge. Daar is egter beperkte inligting rondom die potensiaal van aanlyn bewustheidgebaseerde intervensies om mediese studente se welstand en self-deernis te verhoog en waargenome stres aan te spreek.

Hierdie haalbaarheidstudie het ten doel om die gevolge van 'n ses week lange aanlyn, onderwyser-gefasiliteerde bewustheidgebaseerde intervensie vir mediese studente te vergelyk met dié van ondersteunende berading, om inligting te verskaf vir ’n groter ewekansige-beheerde proef. ‘n Waardebepalende, eksperimentele, gemengde metodesontwerp het 45 deelnemers hulself ewekansig in een van twee groepe geplaas. Kwantitatiewe data is aanlyn versamel voor en na die kursus, sowel as by agt weke se opvolging. ’n Terugvoervraelys is na die kursus voltooi en het kwalitatiewe data verskaf wat deelnemers se ervaring van die programme weerspieël.

Resultate het beduidende positiewe veranderinge in beide deelnemersgroepe se welstand aangedui het, sowel as ’n afname in nood en waargenome stres met positiewe veranderinge in stresbestuur. ’n Onverwagte, dog beduidende afname in self-deernis is ook opgelet. Bewustheids het as ‘n beduidende statistiese verskille tussen die twee groepe getoon na kursus analise.

Ingevolge die bevindinge word daar aanbeveel dat dit voordelig sou wees om ’n stresbestuursprogram vir mediese studente te skep wat bewustheid en stresverwante psigo-opvoedkundige komponente bevat as deel van n breër geestesgesondheidstrategie. ’n Hoofstudie sal verdere inligting bydra tot hierdie area en bevestig of bevindinge veralgemeen kan word te voordeel van tersiêre studente in Suid-Afrika.

Sleutelwoorde: mediese studente, bewustheid, aanlyn bewustheid-gebaseerde intervensies, welstand, waargenome stres, self-deernis

ACKNOWLEDGEMENTS

I would like to thank the following in the completion of this thesis:

My supervisor, Dr Debra Alexander for expert guidance and valued input during this research project

Tonya Esterhuizen from the Biostatistics Unit, Faculty of Medicine and Health Sciences, and Lauren Boyd for assistance with data analysis

The Ithemba Foundation for awarding me a bursary with which to pursue this research

The MBChB Participants for their time and willingness to share their experience with me

Professor Mark Williams and Dr Danny Penman and the book, 'Mindfulness a practical guide to Finding Peace in A Frantic World'

Chris Cullen and Per Norrgren for their valued instruction of the 'Finding Peace' Programme

Dr Julietta Galante and Colleagues for the Cambridge University Mindful Student Study

I would also like to thank my family, Garry, Lauren, and Michael for their love, support and encouragement.

TEN THOUSAND FLOWERS IN SPRING, THE MOON IN AUTUMN

Ten thousand flowers in spring, the moon in autumn,

a cool breeze in summer, snow in winter.

If your mind isn't clouded by unnecessary things,

this is the best season of your life.

Wu Men Hui-K'ai

English version by Stephen Mitchell (1993)

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

CU	Cambridge University
CORE-OM	Clinical Outcomes in Routine Evaluation-Outcomes Measure (CORE-OM)
FP	Formal Practice
HPCSA	Health Professions Council South Africa
IBIs	Internet-Based Interventions
IB-MBIs	Internet-Based Mindfulness-Based Interventions
IP	Informal Practice
M	Mean
MBCT	Mindfulness-Based Cognitive Therapy
MBI	Mindfulness-Based Intervention
MBSR	Mindfulness-based Stress Reduction
MI	Mindfulness Intervention
MSC	Mindful Self-Compassion Programme
MSS	Mindfulness Skills for Students
P	Participants
PSS	Perceived Stress Scale
R/F	Researcher/Facilitator
SACoMD	South African Committee of Medical Deans
SA MH Policy	South African Mental Health Policy
SBS	Step Breathing Space
SC	Supportive Counselling
SCS-sf	Self-compassion Scale short-form

SD	Standard Deviation
SU	Stellenbosch University
WEMWBS	Warwick-Edinburgh Mental Well-being Scale
WHO	World Health Organisation

CHAPTER 1: INTRODUCTION

1.1. Background

1.1.1. Stress and Associated Health Vulnerabilities

It has been noted that perceived stress of challenging life experiences has been negatively associated with mental health issues and positively associated with internal resources and social support (Bovier, Chamot, & Perneger, 2004; Rice, 1999; De Longis, Folkman, & Lazarus, 1988).

Stress-associated mental health issues include depression (Hammen, 2015); anxiety (Bystritsky & Kronemyer, 2014); eating disorders (Shatford & Evans,1986); as well as anger and relationship conflict (Bodenmann, Meuwly, Bradbury, Gmelch, & Ledermann, 2010).

Mental wellbeing and mental health are different concepts. The World Health Organisation (WHO) regards mental health as an important aspect of health in the promotion of people's general wellbeing. It is determined by a combination of socioeconomic, biological and environmental factors (WHO, 2018). Mental health varies from a state of excellent mental health to one of severe mental health issues.

According to Putz, O'Hara, Taggart, & Stewart-Brown (2012), 'mental wellbeing' refers to positive states of being, including thoughts, feelings and behaviour. This term can be used interchangeably with 'positive mental health' and 'wellbeing'. Mental wellbeing is being shown by research to provide an indication of the ability of people to function and thrive.

1.1.2. International Student stress and associated mental health vulnerabilities

Worldwide there are increased concerns about the high level of stress which students are experiencing and the negative academic, emotional, health and career consequences related thereto (Yusufov, Nicoloro-SantaBarbara, Grey, Moyer, & Lobel, 2018; Hurst, Baranik, & Daniel, 2012; HPCSA, 1996 in Van Niekerk, Scribante, & Raubenheimer, 2012; Bayram & Bilgel, 2008). This transition to a tertiary educational environment with its particular academic challenges occurs at a time of developmental change for young adults when their stress management skills are

under-developed (Puthran, Zhang, Tam, & Ho, 2016; Shapiro, J., 2011; Gjerde, 1993 in Bayram & Bilgel, 2007).

If not addressed, stress can be associated with high levels of anxiety (Hughes, 2005) and depression (Arnett, Zukauskiene, & Sugimura, 2014; Bayram & Bilgel, 2008), in young adults who are inclined to withdraw from treatment for mental ill health more than other age groups (Arnett, et al., 2014). There is a tendency, too, not to seek treatment because of time constraints or fears that this will have a negative impact on academic record and career, as well as the stigma associated with treatment and fear of treatment, itself (Puthran et al., 2016).

For medical students these vulnerabilities are exacerbated by the intensity of an extended formal academic programme and the reality of patients' experience of disease, suffering and death (Haglund et al., 2009) as well as the informal and hidden curricula of a multidimensional learning environment (Hafferty, 1998).

Currently, we are in the midst of a COVID-19 pandemic which has affected the global community. The health care system and health care workers have been impacted severely. Previously, during the 1918 Spanish influenza epidemic, medical students' patient care responsibilities in Spain and the United States were increased with little preparation as doctors lost their lives to the infection (Khamees et al., 2020). After 17 medical students from the Chinese University of Hong Kong contracted the 2003 severe acute respiratory syndrome (SARS) virus, medical students' patient care was restricted. Likewise, medical students at the University of Toronto, Canada were suspended from patient care during the same epidemic (Khamees et al., 2020).

During the first outbreak of COVID-19 in Italy, 10 000 medical students were graduated early in order to assist the severely impacted health care system (Amante, Balmer, 2020. In other parts of the world (including South Africa), initially, students' clinical work was suspended and a transition to online learning with changes in assessment formats took place (O'Byrne, Gavin & McNicholas, 2020). These changes were made to protect medical students at risk from the contagiousness of the virus and to potentially prevent transmission when asymptomatic (Rose, 2020). Moral trauma was considered to be an additional risk for untrained and unprepared medical students when, in this particular situation, difficult decisions are being made regarding provision of patient care and inadequate resources (O'Byrne et al., 2020). Final year

medical students' consolidation of specific skills and competencies may have been impacted (Samaraee, 2020; Rose, 2020). An awareness of medical students' mental health has played a role in this decision as health workers have reported increased mental health issues and burnout (Kachra, Brown, 2020).

The pandemic has highlighted a need for pandemic/crisis specific modules in medical curriculum which includes enhancing their awareness of ethics, policy development and resource allocation (Khamees et al., 2020). It has also increased awareness of the need for resiliency interventions to better prepare medical students for potential future experiences (O'Byrne et al., 2020).

Reported mental health issues for medical students like depression, anxiety, burnout and suicide ideation are linked with higher stress (Dyrbye et al., 2006; Stewart et al., 1995). Reported prevalence of mental health issues for medical students worldwide include: almost 30% experience depression (Tam, Lo, & Pacheco, 2019; Rotenstein et al., 2016) and depressive symptoms with relatively low treatment rates (Rotenstein et al., 2016). Dyrbye et al. (2006) systematically reviewed literature of medical student distress and concluded that depression was more pervasive in medical students in comparison to their peers in the general population irrespective of the instrument used.

In an overview of systematic reviews, Tam et al. (2019) reported that the extent of depressive symptoms in medical students in Africa, was highest at 40.9%. A global prevalence rate of 33.8% experience anxiety (Quek et al., 2019), burnout (Dyrbye et al., 2006) and 11.1% report suicidal ideation (Rotenstein et al., 2016). Job stress characteristics like interruptions during work and time pressures were associated with the incidence of suicidal ideation among junior house doctors when age, gender, marital state, life events and personality were controlled for (Tyssen, Vaglum, Gronvold, & Ekeberg, 2001).

The South African healthcare context provides medical students with an additional layer of stress. These include: the prospective entry into a failing health system which has inadequate human resources for an expanding population, chronic underfunding of health professional education and training (SACoMD, 2018; Mayosi & Benatar, 2014; Benatar, 2004). Students also experience uncertainty around graduate internship placements (Matsabu, 2018; Saal, 2017). This deteriorating healthcare system is embedded within an environment of high crime and levels of interpersonal

violence (Atwoli et al., 2013) and the violent upheaval of the 2015-2017 #Fees Must Fall student protests (Jansen, 2017). The mental health issues for South African students (including medical) are intensified and extended to include bereavement, posttraumatic stress and continuous trauma.

CHAPTER 2: LITERATURE REVIEW

2.1. Stress

Stress is described differently depending on which of its aspects are highlighted – this makes it difficult to provide a single definition. Generally, stress can be viewed as either a stimulus, as a response or as a person-situation interaction (Holt et al., 2012).

'Stress' was used initially as a technical term by seventeenth century physicist-biologist, Robert Hooke in relation to the weight or 'load' a bridge could withstand and the resultant deformation or 'strain' over an area of 'stress' as a result of heavy wind or loads, Hooke investigated the differences between the elasticity of different metals and noted the effects of these differences on the metal's resistance to stress (Lazarus, 1993). Depending on the elasticity of a material, it could return to its original shape and size after being compressed or stretched following the application of an external load to it.

This engineering concept of stress influenced early twentieth century approaches where stress was perceived as a biological, psychological or social pressure on a system (Lazarus, 1993). Initially, applied mechanistically, using the concept of stimulus and response to explain 'stress'. In the 1950's, this was revised when studies showed that individual differences determined varied results.

2.1.1. The Stimulus-based Approach

According to Reber and Reber (2001), with respect to physical, psychological and social pressures, the term 'stress' can be used to refer to 'any force that when applied to a system, (it) causes some significant modification of its form' (p.176). Stress as an external event or environmental stimulus (Rice, 1992) is referred to as a 'stressor'.

This stimulus-based approach to stress covers the various conditions which are experienced as stressful. These include: stressful life events, daily life hassles, occupational challenges as well as chronic situations and catastrophes. This approach neglects to explain the reason for varied stressors having a negative impact, nor does it explain people's different reactions to the same stressor or its inability to measure

the impact of stress without asking about the impact of a stressor which is a response-based approach (Louw & Edwards, 1997).

2.1.2. The Response-based Approach

This approach focuses on the effects of the consequences of stress – the stress response. It describes the psychological, physiological and behavioural components which result from pressure, strain or tension.

Hans Selye's 'general adaptation syndrome (GAS)' describes 'the non-specific response of the body to any demand' (1988, p.162) - a universal physiological response in reaction to change, threat or pressure. Triggered in response to an initial alarm, the sympathetic nervous system's fight/flight response with symptoms like increased heart rate, perspiration, tightened muscles and decreased digestion are experienced. As the organism adjusts to a stressor, it is possible to experience 'peak performance' which Selye described as a positive stress reaction or 'eustress' (1974, in Rice, 1992). However, with resources depleted and an inability to sustain performance indefinitely, this is replaced by a negative stress reaction or 'distress' with accompanying symptoms of irritability, lack of concentration, extreme fatigue and feelings of pessimism (Selye, 1983 in Louw & Edwards, 1997).

Like some metals are able to withstand more pressure than others, so too, some people are more susceptible to the negative consequences of stress (Lazarus, 1993). A psychological stress response is influenced by personality variables or 'stress response moderators' - examples of which are behaviour patterns (Type A/ Type B), hardiness, personal resourcefulness and coping processes which increases or decreases an individual's vulnerability to stress (Louw & Edwards, 1997).

2.1.3. The Person-Situation Interaction

Lazarus and Folkman's (1984) theory of stress and coping provides an understanding of psychological stress. Stress is perceived as contextual and a process– it involves an interaction between an individual and their environment which is subject to change over time (Folkman, 2010).

Like Hooke, Lazarus and his co-workers noted that stressors affected people and their performances differently and in order to take into account the effects of stressful conditions, it was important to consider what took place between stressor and response - those 'individual differences in motivational and cognitive variables' (Lazarus et al., 1952, in Lazarus, 1993, p.3) which determine if experiences are regarded as stressors depending on an individual's perception of it as such.

2.1.3.1. Appraisal

According to Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen (1986), the stress response is initiated during a primary appraisal of an environmental experience. During this appraisal, the personal significance of a situation is assessed (Folkman, 2010) in relation to the potential for harm, neutrality or benefit to wellbeing. During this interactional process there is an active construction of meaning from the environment (Lazarus, 1993) which is shaped by the individual's beliefs, values and goals (Folkman, 2010).

Secondary appraisal evaluates personal resources to cope.

Lazarus and Folkman (1984) describe resources as 'factors that precede and influence coping, which in turn mediates stress' (p.158). The determinants of an individual's resources are personal but can include physical (health) or psychological (positive beliefs like hope and personal agency), competencies (problem-solving or social skills) and environmental (material) resources (Lazarus & Folkman, 1984). As social beings, social skills increase social functioning and the ability to draw on others as an effective and appropriate resource increasing personal agency. Social support mitigates the relationship between stress and wellbeing (Haldorsen, Bak, Dissing, & Petersson, 2014).

Secondary appraisal takes into account the potential outcomes of successfully/ unsuccessfully managing an experience as well as the psychological consequences (impact on self-worth and world view) thereof. In doing do, the process endeavours to control an outcome or increase its benefit, if this is a possibility (Folkman et al., 1986).

During appraisal the situation is perceived as 'harm', 'loss', 'threat' or 'challenge' and initiates the corresponding emotional response. An appraisal of 'loss' is associated

with anger or sadness, ‘threat’ with anxiety and fear and ‘challenge’ with a combination of anxiety and excitement (Folkman, 2010). Emotion impairs adaptation by interfering with cognitive functioning. An example: anxiety interferes with performance in two areas through motivational interference, whereby instead of attending to a task at hand, attention is diverted to address a more pressing emergency and cognitive interference. The latter involves anxiety-laden thinking which hinders functioning and performance (Folkman & Lazarus, 1988).

In this model, stress is neither an environmental stressor, nor a personality characteristic or a response but a relationship between demands and the ability to manage them (Coyne & Holroyd, 1982, in Rice, 1992). An individuals’ cognitive appraisal of an experience as stressful may be different to another’s perception of the same experience and depending on the current psychological or physiological state, may be interpreted differently by the individual (Rice, 1992). If an individual perceives a situation/experience as stressful, then it is stressful (Lazarus & Folkman, 1984). Furthermore, an individual’s vulnerability to stressor’s negative effects may place their wellbeing at risk when their resources are perceived as inadequate or are depleted during management of a stressful experience (Lazarus & Folkman, 1984). Haldorsen et al. (2014) reported ‘students who appraise stress as negative and undesirable, experience more psychological distress when the frequency is high’ (p. 92).

2.1.3.2. Coping

Depending on an individualised appraisal of an experience, the stress response is activated, moving to manage or alter an issue by motivating movement towards changing the circumstances or re-perceiving an experience more favourably – called ‘coping’ (Lazarus, 1993). Thought and behaviour address inner and outer stressors. These may include coping strategies and or resources of personal skill and knowledge, verbal skills and reliance on social support (Folkman et al., 1986).

In the medical field, Zwack and Schweitzer (2013) identified health promoting strategies employed by experienced physicians which enhanced the maintained use of resilience -promoting activities. Health-promoting activities such as experiencing job gratification; practising self-demarcation, leisure activities and limiting working hours as well as an attitude which focused on enjoyable aspects of their work helped to

promote coping reservoirs from which effective decisions were made. In turn, this promoted continued use of resilience-promoting abilities despite challenging working environments. Resultant positive emotions are experienced when a situation is satisfactorily resolved (Lazarus & Folkman, 1984).

The terms ‘approach’ and/or ‘avoidance’ refer to the way in which individuals orient towards stressful information or cope with stress. They describe cognitive or emotional activity in which ‘avoidance’ reduces stress and anxiety from becoming overwhelming whereas ‘approach’ refers to the possibility of noticing and taking advantage of a fluctuating situation and /or taking action which is appropriate to managing the stressful situation, making it more controllable. The latter also allows for the expression of emotion (Roth & Cohen, 1986).

Process- oriented coping serves to regulate negative, stress-inducing emotions (emotion-focused coping) and to change the relationship between the stressful experience or environment (problem-focused coping). Unexpectedly, research has shown that positive emotions co-occur with negative emotions during excessively stressful experiences (Folkman, 2008) and the presence of positive emotions restores physiological, psychological and social coping resources (Folkman, 2008). This enables meaning-focused coping (Folkman, 2010).

Emotion-focused strategies aim to reduce negative emotional arousal without trying to change the source of stress (Bennet & Murphy, 1997) and may include distancing, repression, escape- avoidance, wishful thinking (Holt et al., 2012) and seeking emotional support (Folkman, 2010). ‘Social support has a direct, positive effect even in the absence of stress’ (Haldorsen et al., 2014, p. 90) and mitigates the effect of stress on well-being (Haldorsen et al., 2014).

Problem-focused, approach strategies aim to actively work to manage and change the source of stress (Bennet & Murphy, 1997) like planning, active coping and problem solving, exercising restraint and assertive confrontation (Holt et al., 2012). Meaning-focused coping occurs alongside negative emotions during intense and stressful circumstance like caregiving, bereavement and in cancer patients nearing end of life (Folkman, 2010). The latter increases resources for coping by reperceiving ‘threat’ as ‘challenge’ and enhancing motivation for sustained coping over a period of time (Folkman, 2010) and providing relief from distress (Folkman, 2008). Underlying

beliefs, values and goals are believed to play an adaptational role in meaning-focused coping as well as gratitude and forgiveness strategies (Folkman, 2008).

The different types of coping styles work together in an interactive, dynamic system and may not result in an absence of stress but instead, an outcome which is perceived as having successfully resolved an experience when measured against an individual's goals and values (Folkman et al., 1986).

High levels of stress and particularly ongoing stress have been shown to increase the probability of developing symptoms of anxiety and depression. Research has shown that a protection from the effects of stress, are high levels of resilience (Gloria & Steinhardt, 2014).

2.1.3.3. Resilience

'Resilience is the capacity to respond to stress in a healthy way such that goals are achieved at minimal and physical cost; resilient individuals 'bounce back' after challenges while also growing stronger' (Epstein & Krasner, 2013, p. 301).

Sisto et al.'s (2019) literature review noted several definitions of the term psychological resilience. These were an ability to recover and experience personal growth in the process, individual characteristics utilised to face adversity and an evolving process combining personal attributes, family and social resources as well as being able to regulate stress resulting from thought processes determining adaptive emotional and behavioural responses.

Their summary noted that through resilience and resilient attitudes, it is possible to face life's challenging experiences with perseverance thereby activating and enhancing resources to strengthen and bring about positive self-change and personal fulfilment.

Southwick and Charney (2012) describe an important aspect of resilience as positivity and hope in a brighter future. Their view is that these counter- balance sympathetic nervous system arousal from negative emotions which narrow focus to danger and ensure entrapment in a stress response (Southwick & Charney, 2012). Although this process is crucial for ensuring survival, especially during challenging and stressful

experiences, it is 'the adaptive ability to face fear and treat it as a guide rather than as an adversity (which) is crucial' (Friedberg & Malefakis, 2018, p. 94). They concluded that psychological resilience is 'the ability to adapt positively to life conditions' (Friedberg & Malefakis, 2018, p. 94). This entails the use of learned life skills to successfully manage stress so that self-efficacy is increased, reframing threat as challenge (Southwick & Charney, 2012). It is a dynamic process evolving over time that implies a type of adaptive functioning that specifically allows us to face difficulties by recovering an initial balance or bouncing back as an opportunity for growth (Sisto et al., 2019, p.14)

From the review's results, resilience could be regarded as a competence and skill- set present in every individual which enables an ability to meet and overcome challenges and regain a state of balance. Since this is regarded as an evolving progression of psychological and physiological adjustments enabling adaptation, it is possible to provide educational tools which aim to develop an attitude of openness to change (Sisto et al., 2019) as well as coping techniques and strategies enabling effective management of adversity (Friedberg & Malefakis, 2018).

Epstein and Krasner (2013) suggest that resilience -building programmes within health care, should include the goal of developing a sense of community for support. This would counterbalance a sense of isolation from working in different settings, without emotional support which is worsened by increased reliance on technology and decreased contact communication.

The skill of active coping enables the way in which a stressor, its qualities or the way in which it is perceived, is changed through behaviour or psychological strategies instead of avoidant coping (Gloria & Steinhardt, 2014; Wu et al., 2013).

2.2. International Students' stress and mental health vulnerabilities

For students at tertiary institutions, there is a substantial increase in perceived stressors which decrease their overall wellbeing and contribute to mental health issues for many. In a review of forty qualitative studies of college student stressors conducted in developed and developing countries published between 2000 and 2012, Hurst et al. (2012) identified eight themes related to the college students' perceptions of stressors.

These were: relationships (family, romantic, peers, faculty), insufficient resources (time, money, support, skills, technology, sleep), expectations (self and other), academics (general, examinations, lessons, studying) environment (disruptive, unfamiliar, relocation in a different country, military), other (career, extracurricular activities, health, personal appearance), diversity (racial minority, disability, first generation college, sexual orientation) and transition (to university) (p.5).

Similar themes were noted in Yusufov et al. (2018); Beiter et al. (2014); and Khawaja and Dempsey (2008) with international and domestic students.

Kronfol et al. (2018) reported a prevalence rate of depression of 34.6%, generalised anxiety of 36.1% and eating disorders of 20.4% in two developing Arab countries' universities. Similarly, Bayram and Bilgel (2008) reported 27.1% for depression and 47.1% for anxiety in a group of Turkish students. Stewart et al. (1995) reported high self-report scores of anxiety and depression for Year 2 Hong Kong Chinese students and greater reliance on the university's health professional services. Rates of elevated distress were significantly higher among students than their peers in general Canadian and British populations (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001; Roberts, Golding, Towell, & Weinreb, 1999).

Prevalence of suicidal ideation in a US student sample was reported at 6.3% (Eisenberg, Gollust, Golberstein, & Hefner, 2007) and 11.4% in a sample of Turkish students (Toprak, Cetin, Guven, Can, & Demircan, 2011).

2.2.1 Social Support as a Mediator of Student Stress and Mental Health

The perception of not having access to social support is a significant factor which is associated with mental issues in students. Bovier et al. (2004) noted that when social support is low, internal resources like mastery and self-esteem may be important prerequisites of mental health in young adults. In a comparative study of international and domestic students, international students with less social support, reported more use of dysfunctional coping strategies. Greater incongruencies were noted between their expectations of university and reality (Khawaja & Dempsey, 2008).

Adlaf et al. (2001) reported decreased elevated distress with recreational participation and increased elevated distress with academic orientation. It is suggested that the

reason for this is that the former includes social interaction which serves to reduce distress and other symptoms. This acts as a causal contributor to well-being- providing a socially- supportive, protective buffer from stressful experiences (Cohen & Wills, 1985). Social support may temper the effects of stress in the following ways: an initial appraisal of a situation as less stressful, in the provision of solutions to stressors and/or minimising its importance which promote healthy behavioural responses (Cohen & Wills, 1985).

2.2.2. Group Interventions to promote Student mental health

In a meta-analysis of mental health promotion and prevention programme outcomes research, Conley, Durlak, and Dickson (2013), identified six categories of mental health promotion and prevention programmes which covered psychoeducation about stress, cognitive behavioural (CBT) and relaxation techniques as well as mindfulness and other forms of meditation and problem-solving skills. The most effective were identified as cognitive- behavioural and mindfulness programmes. Later, Conley, Durlak, and Kirsch (2015)'s meta-analysis of the effectiveness of university mental health prevention programs noted increased efficacy of supervised skill-training programmes than those without a supervised experiential component or a psychoeducational programme alone to improve social-emotional skills, self-perceptions, academic behaviour and performance. The inclusion of supervised practice, coupled behavioural rehearsal and opportunity to practice new skills with supportive feedback which helped participants to receive feedback regarding correct enactment of skills and increased motivation to use the skills following course completion. Expecting participants to practice between sessions without the supervised practice within a session was found to be effective in addressing anxiety instead of a wider range of benefits with supervised practice. Relaxation interventions followed by CBT and mindfulness programmes demonstrated the most overall benefits for higher education students.

2.3. International Medical Students' stress and mental health vulnerabilities

As per Hurst et al. (2012), similar stressors were identified in studies conducted with undergraduate medical students by Yussuf, Issa, Ajiboye, and Buhari (2013) at a Nigerian university; Tempski et al. (2012), at six medical schools in Brazil; Owoaje, Uchendu, and Ige, (2012) at a university in south west Nigeria; Amr, El Gilany, and El-Hawary, (2008) at an Egyptian university; Sreeramareddy et al. (2007) in Nepal and Shaik et al. (2004) in Pakistan.

Stressors which are particular to undergraduate medical students are experiences of disease, suffering and death (Tempski et al., 2012) as well as experiences of mistreatment (Owoaje et al., 2012), with physicians the main perpetrators and mostly during surgical rotation. For Haglund et al. (2009) in Year 3 when clinical experience began, traumatic experiences with patients were adjusted to and indicated student resilience. However, tolerating personal mistreatment and negative physician and resident role modelling, reduce student wellbeing.

Shapiro, J. (2011) also highlights emotional challenges which involve learning to engage appropriately with patients, and manage their own emotions in an arena which sends an implicit message that stress is okay and emotions should be contained. Mills and Chapman (2016) draw attention to the role-modelling of doctors' tendency to be self-critical and perfectionistic with self-care not prioritised in a profession where burnout is prevalent.

An association between these stressors and symptoms of depression and anxiety disorders in medical students in comparison to their peers in the general population has been noted in (Dyrbye et al., 2006) with 43% prevalence of anxiety and 14% depression (Bunevicius, M., Katkute, & Bunevicius, R., 2008). An association was noted between symptoms of anxiety and lower rates of emotional stability, and increased vulnerability to stress. Symptoms of depression were associated with hightened vulnerability to stress (Bunevicius et al., 2008; Dahlin, Joneborg, and Runeson, 2005).

In Haldorsen et al. (2014), recurring perceptions of stress as negative were significantly associated with self-reported symptoms of depression - lower stress scores were reported by non-depressed medical students than those reporting depressive symptoms. This study noted that for those medical students who were

having to manage psychological issues without support, this was significantly associated with symptoms of depression compared to those who received help from their loved ones.

A low level of emotional stability and severe depressive symptoms together with negative life events were found by Tyssen et al. (2004) to be independent predictors of suicidal behaviour in medical students. It was suggested that negative life events may trigger suicidal action.

A high prevalence rate of 71% for criteria of burnout was reported in Mazurkiewicz, Korenstein, Fallar, and Ripp (2011) in a study with New York medical students. This was in contrast to Dyrbye et al. (2006) in three medical schools in Minnessota (US), where a 45% prevalence rate for burnout was reported. Of the studies examining burnout in health care students between 2006 and 2015 which were reviewed by Bullock et al. (2017), 85% were conducted with medical students. A high correlation between stress and burnout was noted in the reviewed studies. Furthermore, it was noted that health care students at the end of their training, reported higher levels of burnout than peers in the general population. An inverse relationship between burnout, empathy and low quality of care as a professional was noted (Bullock et al., 2017). In Paro et al. (2014), students in their final stage of medical school (Year 5 and 6) reported slightly higher scores for emotional exhaustion, depersonalisation and personal accomplishment. Results indicated personal accomplishment was associated with decreased personal distress. Personal accomplishment enhanced perspective taking.

Norwegian medical students who were assessed for the prevalence and predicators of suicide by Tyssen et al. (2001), reported that a perceived lack of control, personality trait and being unmarried were stressors contributing to suicidal ideation. Although negative life events were also reported as stressors, the most significant stressor was mental distress (anxiety and depression).

2.3.1. Coping strategies of International Medical Students:

Varied coping strategies are noted in different studies. Deressa and Azazh (2011) described medical students in an Ethiopian university using alcohol (22%); khat (7%)

and tobacco (9%) to manage their stress. Counselling (preferred method), meditation, exercise and social support were coping strategies reported by Redwan, Sami, Karim, Chan, and Zaleha (2009) with Malaysian university students. In a study with Nepalese medical students, Sreeramareddy et al. (2007) noted that positive reframing; planning; acceptance; active coping; self-distraction and emotional support were techniques used to manage stress.

Lo et al. (2018) in a systematic review and meta-analysis of group interventions to promote mental health in health professional education noted that mindfulness, CBT and relaxation programmes were able to reduce stress and support mental health. It contradicted Conley et al. (2015) with regard to a significant lack of benefit of psychoeducation on anxiety, depression or stress in comparison to alternative educational controls.

2.4. Vulnerabilities particular to the South African environment

Atwoli et al. (2013) attribute South African's high level of trauma to its history of apartheid, exploitation of its population and since 1994, high levels of crime and interpersonal violence with 70% of the population in the South African Stress and Health Study reporting exposure to at least one potentially traumatic event. A lifetime prevalence of PTSD (2.3%) and witnessing traumatic events accounted for 50% of the PTSD burden (Atwoli et al., 2013).

In addition to this high level of general population personal trauma, particular to the student environment are the 'Fees Must Fall' student protests of 2015-2016, in which peaceful protests became chaotic and violent resulting in persistent campus instability, unpredictable teaching and examination schedules, destruction of property and life endangerment. This is in contrast to United States' student protest action of the same period which tended to be focused, brief and not usually violent. The rights of others were respected and classes weren't disrupted (Jansen, 2017).

2.5. South African Students' stress and mental health vulnerabilities

Within the general student population, issues for which 831 students received counselling at the University of Witswatersrand's two counselling centres in 2008: Emthonjeni Centre and Career Counselling and Development Unit included those related to: academic, relationship and mental health. Associated mental distress included: depression, 11.5%; anxiety, 7.6%; trauma, 7.5%; bereavement and stress (Bowman & Payne, 2011). The presence of trauma and bereavement as presenting issues is an indication of the high level of trauma and witnessing of trauma within South African communities and were not reported as stressors in the literature related to international students. Like Flisher, De Beer, and Bokhurst (2002) this study reported more younger students (16-23) seeking counselling than older students.

Although financial issues were not present as a major presenting problem in Bowman and Payne's study (2011), Letseka and Maile (2008) in a HSRC policy brief, report of low (15%) South African pass rates, with wide disparities between South African white and black student average graduation rates. 70% of families of higher-education attrition were from category 'low-economic status'. Dependence on family members for financial support and supplementation through part-time jobs, are described as additional stressors for these students.

Draper-Clarke and Edwards (2016) qualitative study of 14 student teachers' lived experience of stress at a South African university confirmed curricula content, traumatic life events, financial difficulties and interpersonal relationships as stressors. It further highlighted accommodation and transport issues (living long distances from campus, the risk of utilising public transport) as stressors as well as the experience of working within a system overburdened by ongoing changes during the democratic transition. Some of these included overcrowded and inadequate facilities, lack of basic resources, long working hours, role conflict, staff absenteeism and disillusionment resulting in more teachers leaving than are entering the profession.

Like Bowman and Payne (2011), this study (Draper-Clare & Edwards', 2016) reported the prevalence of depression, anxiety and stress within the group as does the study of McGowan and Kagee (2013). The latter also noted almost 90% of the study's 1337 participants at an advantaged university reporting at least one traumatic lifetime event, and 43% had experienced a suicide or murder of a close friend or family member.

Higher levels of anxiety, depression and PTSD were reported amongst the 93% having experienced one traumatic lifetime event with intrusive thoughts the most commonly reported symptom following this experience.

Within the wider South African student population, a study of the symptoms of posttraumatic stress, depression and anxiety as predictors of suicidal ideation reported 24.46% of the sample (n=1337) having had some form of suicidal ideation in the two weeks prior (Bantjes, Kagee, McGowan & Steel, 2016). Of this, 1.2% reported an actual intention to commit suicide and 0.45% reported they would do so, if given the opportunity. Depression was identified as the most significant predictor of suicidal ideation (Bantjes et al., 2016).

2.6. South African Medical Students' stress and mental health vulnerabilities

Like education, the South African Health care system is similarly under strain and a special report by Mayosi and Benetar (2014) describes a 'relentless burden of infectious and noncommunicable disease, persisting social disparities and inadequate human resources to provide care for a growing population with a rising tide of refugees and economic migrants' (p.1344). Rossouw, L., Seedat, Emsley, Suliman & Hagemeister (2013) note factors contributing to the prevalence of burnout and depression in medical doctors within the Cape Town Metropolitan Municipality's health care clinics and the Provincial Government's district hospitals are an excessive workload, poor work culture organisation, inappropriate training for work requirements, inadequate resources and management thereof as well as extended working hours, insufficient holiday time and lack of a network of system support. This is the context within which medical students are trained and enter as professionals, following an intense academic schedule and may be described as a necessary preparation for work life. It serves too, to discourage those who are not able to cope with the study of medicine (Reidbond, 1983 in Wilson, Warton & Louw, 1998, p. 25) or to move to other less directly stressful areas of medicine (Wilson et al., 1998).

The following additional stressors of language, understanding content and communication difficulties are noted for 94 South African medical students by Naidoo, Van Wyk, Higgins-Opitz, & Moodley (2014) in Kwa Zulu Natal as well as 223 students'

experiences of professional lapses and patients' rights' abuses during selected clinical rotations at UCT Faculty of Health Sciences (Vivian, Naidu, Keikelame, & Irlam, 2011).

Van der Walt, Mabaso, Davids and De Vries (2020) highlight financial difficulties, increased competition for medical school placement and university underpreparedness as a result of continued educational inequality. Additional sociopolitical stressors include pressure on first generation students to uplift their families from poverty, continued exposure to societal inequality and the impact of student protests on mental health. The latter was shown to be associated with the increased likelihood of a clinical diagnosis of an anxiety or depressive disorder for affected Year 2 and Year 3 MBChB students at UCT when teaching- learning time and year end assessments were made up in a 2017 mini-semester.

With regard to mental ill health, academic and anxiety performance correlated significantly in second year UCT medical students (Wilson et al., 1998). Like their student teacher peers, medical students in South Africa also present with depression, anxiety and stress. Depression, anxiety and stress levels were reported at almost 30% in 295 second and third year UFS students by Van Zyl et al., (2017). Colby et al. (2018) reported an association between the levels of burnout and quality of life among 91 fourth year medical students at UFS.

With respect to gender, female medical students reported more stress overall in Wilson et al. (1998). In Naidoo et al. (2014), male medical students reported more stress in Years 1, 3 and 5 in comparison to female medical students who reported stress in Year 1-3 but the highest levels of stress in Year 5.

A high prevalence of suicidal ideation (32.3%) and suicidal attempt was reported in 874 medical student participants from three universities' medical schools (Pretoria, UCT and UFS) by Van Niekerk et al. (2012). The former is three times higher than comparative data worldwide (Dyrbye et al., 2008, in Van Niekerk et al., 2012). A higher prevalence of suicide attempt was noted than their age-equivalent South Africans (6.2% compared to 2.95%). Symptoms of decreased life satisfaction and burnout were noted as risk factors for suicide within the group.

Preclinical medical students employed emotional and university support as coping strategies whereas clinical students did not (Vawda, 1999 in Naidoo et al., 2014). The latter were reportedly in denial and instead used negative coping like denial and

substance use as well as venting to manage their stressors. Likewise, Van Zyl et al. (2017) noted negative coping in past month use of alcohol and nicotine amongst the study population.

Positive coping strategies used by students in Naidoo et al. (2014), were the use of lifestyle changes or adaptations used to balance workload. Relaxation activities as well as supportive networks which included friends, family, peers, study groups and religious affiliations were additional positive coping strategies utilised.

2.7. Interventions for Distressed Populations

2.7.1. Prevalence of Mental Ill-health

Mental Health is described as 'a state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community.' (WHO, 2018) Since mental health is of primary importance in our ability to think, feel and interact with each other, 'the promotion, protection and restoration of mental health can be regarded as a vital concern of individuals, communities and societies throughout the world' (WHO, 2018). Previously, research and treatment of mental health has focused its attention on the development of a mental disorder instead of wellbeing (Putz et al., 2012).

Mental health promotion includes the creation of an environment which supports mental health in which basic civil, political, socio-economic and cultural rights are respected and protected and effected through governmental and non-governmental policies and programmes in the areas of education, labour, justice, transport, environment, housing and welfare. The WHO's 'Comprehensive Mental Action Plan for 2013-2020' focuses on the protection and promotion of human rights, civil society's empowerment and the central role of community-based care (WHO, 2018).

A mental disorder is described as a collection of behavioural and psychological symptoms which creates disability or distress for an individual in social, personal or occupational functioning (Morrison, 2014). Individuals diagnosed with a mental disorder may be treated with pharmacology, different philosophical theoretical perspectives (like psychodynamics, social and learning theories) and brain stimulation techniques or a combination thereof.

With 85% of the world's population living in 153 low and middle-income countries (LMICs) and more than 80% of individuals with mental disorders living in LMICs, this disease burden is exacerbated by scarce financial resources, insufficient workforces and inadequate infrastructure for mental health services (Rathod et al., 2017). South Africa's gross national income is similar to other middle-income countries in sub-Saharan Africa however the extreme level of income disparity within the population and between urban and rural areas, makes South Africa's mental health burden unique.

There is a higher prevalence of mental disorders experienced by South Africans than many LMIC countries - almost one in three South Africans will experience a mental disorder in his/her lifetime (Jack et al., 2014). The gap between those with mental illness and requiring treatment, and those who receive treatment is estimated at 75% in South Africa (Williams et al., 2008 in Lund et al., 2015) which is attributed to South Africa's unique post-apartheid, socioeconomic and cultural inequalities with large discrepancies in health care between rural and urban areas, widespread existence of HIV and an increasing rate of chronic conditions like diabetes and cardiovascular disease (Jack et al., 2014).

2.7.2. International Treatment of Mental Ill-health

Various types of therapy are used to address mental, emotional and behavioural disorders (Alexander & Hendricks, 2018). In order to assess treatment type, it is necessary to consider problem/illness severity, client level of discomfort and its impact on daily living. Psychopharmacology and various psychotherapy treatments are most commonly used to treat mental ill-health and promote mental wellness. Psychotherapeutic approaches are: psychoanalytic, behavioural, cognitive and existential-humanistic. All aim to identify the presenting problem, prognosis regarding the problem's course and initiation of treatment. Within the 'safe space' of a therapeutic relationship, the client talks about his/her problem and the therapist listens (Alexander & Hendricks, 2018). This therapeutic alliance is one of the tools through which change and healing can occur.

In Saudi Arabia, psychopharmacology (71%) is most commonly used to treat mental health issues with supportive therapy (40%), cognitive therapy (23%), combined

approach (17%), psychodynamic and family therapies (8%) and group therapy (6%) to a lesser degree (Algahtani et al., 2016 in Rathod et al., 2017). Group interpersonal therapy was used effectively in rural Uganda to treat depression and with adolescent girls in northern Uganda who had been displaced by war. In rural Pakistan, culturally adapted, low -intensity CBT was used in the treatment of depression and psychosis (Rathod et al., 2017). In Zimbabwe, lay health workers have been delivering counselling through a 'Friendship Bench' intervention. This intervention trains grandmothers of the community in counselling skills. Improvements in depression, anxiety, disability and health related quality of life were noted (Lund, 2018). Rathod et al. (2017) note that few receive psychotherapeutic treatment because of limited resources and inadequate training.

2.7.3. Supportive Counselling

Supportive Counselling approaches are commonly used worldwide (Jacobs & Reupert, 2014): 31% of 2200 North American psychotherapists (Cook et al., 2010 in Jacobs & Reupert, 2014) and at 40%, was shown to be the second most common intervention after pharmacotherapy (71%) reported by 63 mental health professionals in a Saudi Arabian survey (Algahtani et al., 2016 in Rathod et al., 2017).

This Rogerian psychotherapy based-model aims to encourage expression about experiences and emotions and to offer empathy in a patient-centred, nondirective approach. Through close listening, reflection and positive regard, the therapeutic alliance encourages an awareness of patient strengths and wellbeing to deal with transitory issues or to effect change. It facilitates experiences of hope, success and mastery. Typically, homework is not assigned with the advantage that non-completion prevents feelings of failure (Markowitz, 2014; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004) but some therapists may include problem-solving skills, psychoeducation or cognitive behavioural techniques which incorporate homework (Jacobs & Reupert, 2014). Supportive counselling can be offered in a group setting to enhance the sharing of experience and development of a safe, community-based environment.

Supportive Counselling was used as an active control in Schellekens et al. (2017) for distressed cancer survivors; Rossouw, J. et al. (2016) with adolescents, Jannati,

Khaki, Sangtarashani, Peyrovi, and Nojadeh (2012) with Iranian nursing and midwifery students and Neuner et al. (2004) for traumatized refugees in comparison to narrative exposure therapy and psychoeducation.

2.8. South African Treatment of Mental Ill-health

In South Africa, at the time of drafting the 'South African Mental Health Policy (SA MH Policy) Framework and Strategic Plan in 2013', mental health care services include medication for severe mental illness (Schneider et al., 2016) as well as various psychotherapeutic approaches. The objectives of the SA MH Policy are to integrate mental health care into primary care whilst increasing public awareness about mental health. It aims to reduce the negativity associated with and discrimination towards mental ill health as well as promote all South African's positive mental health. It is planned to empower mental health users through their participation in promoting mental wellbeing within their communities, with the planning and provision of mental health services being evidence-based.

There is increased agreement globally that a task-sharing approach may address the treatment gap through the provision of circumscribed mental health interventions by general health workers who are trained and supervised by mental health specialists (Schneider et al., 2016; Lund et al., 2015; Jack et al., 2014). Since 2013, a move to integrate mental health into primary health care has included the training of some primary health care nurses (Schneider et al., 2016).

One such evidence-based mental health intervention which offers the promotion of mental wellbeing by general health facilitators, may be that which is mindfulness-based.

2.9. Mindfulness-Based Interventions

2.9.1. Mindfulness

Mindfulness is described as 'paying attention in a particular way: on purpose, in the present moment, and non-judgmentally' (Kabat-Zinn, 1994, p.4).

Mindfulness is a mental training technique which involves learning to recognise a reactive impulse to solve a problem. Instead, it encourages intentionally viewing a problem through a lens of nonreactivity and kindly awareness (Segal, Williams, & Teasdale, 2013), as well as learning to notice related negative thoughts, feelings and body sensations without getting embroiled in them. Since this is a new skill being learned, it requires an active engagement by the learner with the teacher during the course of the intervention and it is expected that the learner will apply and practice the new skill in in daily life (Parsons, Crane, Parsons, L., Fjorback, & Kuyken, 2017).

This changes the relationship with an issue: focusing on process instead of content, offering an alternative to avoidance of difficult and painful by 'turning toward' and investigating these experiences (Segal et al., 2013).

Segal et al. (2013) describe how participants in a class, learn 'a more general mode of mind that (is) especially helpful in relating to difficult experiences' (p. 58). Regular meditation familiarises one with an understanding of the nature of cognitive reactivity, and one's relationship to it as well as a different relationship to all experience to encompass feelings, body sensations and impulses to act.

Studies have shown a reduced cognitive vulnerability to stress and emotional distress (Astin, 1997; Shapiro, Schwartz, & Bonner, 1998; Williams, Kolar, Reger, & Person, 2001 in Bishop et al. 2004) and reductions in psychological morbidity associated with medical illness (Bishop et al., 2004) through the practice of mindfulness.

Bishop et al. (2004) offer a model of mindfulness, comprised of attention and attitude. Through mindfulness practice, attention is consciously placed on what is taking place currently in an experience: both internally and externally. It involves noticing and being aware of thoughts, feelings and body sensations (that is, the contents of consciousness) as they shift and change through the skill of 'sustained attention'. This is taught through the practice of maintaining attention on a focal point (e.g. somatic sensations of the breath, listening to sounds) so that when the mind wanders or feelings and/or body sensations arise, moving awareness away from the focus point, the instruction is to acknowledge this, and return the attention to the focus point consciously, through the skill of 'switching'.

'Switching' describes the ability of attention to be flexible in order to change from one focal point to another. This results in being alert and present to what is taking place

now. Through mindful self-regulation of attention, it is possible to become aware of arising habits of cognitive reactivity, associated feelings and body sensation without becoming entangled or elaborating on them. With mindful awareness, 'thoughts and feelings are observed as events in the mind, without over-identifying with them and without reacting to them in an automatic, habitual pattern of reactivity' (Bishop et al., 2004, p. 232). Without over-identification and automatic reflexive reactivity, it is possible to choose to respond, reflectively. This provides additional capacity to attend to current experience.

Attitude refers to the way in which one orients towards present moment experience – the 'how' of mindfulness. Kabat-Zinn (2013) refers to attitude as the 'soil' in which mindfulness is cultivated and the pillars of a mindfulness practice. Seven foundations are named as: non-judging, beginner's mind, patience, trust, non-striving, acceptance and letting go. Practicing with curiosity (beginner's mind) and acceptance, results in reduced avoidance strategies of emotionally distressing experiences. Instead of resisting or trying to change what is present, an attitude of interest and inquisitiveness is encouraged from which there is an opening to what is real at this time instead of wanting things to be different to what they are (Bishop et al., 2004). With an attitude of openness, it becomes possible to recognise the impermanence of thoughts instead of identifying with them or seeing them as a reflection of reality.

Shapiro, Carlson, Astin, and Freedman (2006) includes 'intention' 'meta-mechanism of action, reperceiving' (p. 2) in their model of mindfulness.

Intention is the skill whereby attention is placed 'on purpose' and is a reminder of the reason for personal practice – the 'why?'. Outcome and intention are interrelated-initially, the purpose for practice might include self-regulation in relation to stress management. This may change and evolve over time to self-exploration and later self-liberation and compassion for all beings as practice deepens and increased awareness arises. (Shapiro et al., 2006)

As a result of attention, attitude and intention, Shapiro et al. (2006) propose that there is a change in perspective. This 're-perceiving' is viewed as a meta-mechanism whereby 'rather than being immersed in the drama of our personal narrative or life, story, we are able to stand back and simply witness it' (p.5) and there is a shift from content- focus to process-focus of an experience. This leads to positive change in the

areas of self-regulation and self-management, flexibility of thoughts, feelings and behaviour, values clarification and desensitisation to and tolerance of strong emotions with increased objectivity with an ability to respond instead of reacting.

Bishop et al. (2004) describe mindfulness as a psychological process because of the way in which a mode of awareness arises as attention is trained to remain purposively on what is taking place in the present moment without judgment.

> 'Mindfulness is therefore similar to a skill that can be developed with practice…As long as attention is purposely brought to experience in the manner described, mindfulness will be maintained, and when attention is no longer regulated in this manner, mindfulness will cease' (p. 234)

Training occurs through meditation practice, however, once learned, mindfulness can be practiced in daily life encouraging a skilful response to stress and emotionally provoking experiences. Following an analysis of empirical research, Keng, Smoski, and Robins' (2011) concluded that mindfulness 'brings about various positive psychological effects including subjective wellbeing, reduced psychological symptoms and emotional reactivity and improved emotional regulation' (p.1).

2.9.2. Self-compassion

'Compassion' refers to a willingness to be open to and moved by others' distress and suffering and a desire to relieve this for them through offering patience, kindness and a non-judging understanding that we are all imperfect and make mistakes (Neff, 2003 a, p.224).

Neff (2003b, p. 85) describes three elements of self-compassion: 'self-kindness' (versus self-judgment/self-criticism), a sense of 'common humanity' (versus isolation) and 'mindfulness' (versus over-identification) when experiencing distressing thoughts and feelings in relation to self. Self-compassion refers to a healthy form of self-acceptance whereby inner pain is approached with a warm, kind and considerate attitude. It includes an ability to recognise that since one is human, and as such, makes mistakes but also to recognise that all (including self) are worthy of compassion without avoidance or rumination (Neff 2003a). This increases a feeling of interconnectedness and creates a wider perspective of personal suffering.

Meditation practices in spiritual traditions evolved to develop kindness, compassion and altruistic behaviour in various forms and contexts. Loving kindness meditation (LKM), compassion mediation and Christian contemplation are examples of such practices (Galante, J., Galante, I., Bekkers, & Gallacher, 2014).

Salzberg (1999) describes loving kindness as 'the quality of heart that recognises how connected we all are… a form of inclusiveness of caring, rather than categorises others in terms of those we care for and those who can easily be excluded, ignored or disdained' (p. 177).

Kindness-based meditation were generally shown to promote positive emotions (Galante et al., 2014) and has a promising potential to improve people's health and well-being. However, since this intervention may have varied effects at many levels, as indicated in Salzberg (1999), people may differ in the way they respond to this type of meditation, and it may take time for benefits to be noted.

Like the emotional regulation strategy of mindfulness's components of curiosity and acceptance, the presence of self-compassion enables the holding of painful and distressing feelings with a kind, appreciative attitude and a sense of shared humanity (Neff, 2003a), encouraging an emotional-approach instead of an emotional avoidance coping strategy. This in turn gives rise to proactive coping behaviour in relation to stress management with the identification of thoughts, emotions and behaviour and their expression in a way which promotes and supports well-being (Neff, 2003a). In the event of a stressful experience, a self-compassionate response could involve pausing to offer self-support instead of rushing to find a solution. Self-compassion emphasises soothing and supporting the 'experiencer'/ the 'self' during stressful times.

2.9.3. Mindfulness-based Stress Reduction

The original Mindfulness Based Stress Relief (MBSR) programme was developed in 1979 by Jon Kabat-Zinn at the University of Massachusetts Medical Centre in order to assist patients suffering from chronic pain.

The assumptions which underly the concept and approach of Mindfulness include: a lack of awareness of present moment experience as people operate on 'automatic pilot', the potential to develop sustained awareness of mental content gradually and

progressively, through regular practice which provides an enriched, more vital sense of life in contrast to unconscious reactivity. Continued nonjudging of mental content provides an opportunity to develop an increased accuracy of one's perceptions and mental responses thereto, enhancing coping and self-efficacy (Grossman, Niemann, Schmidt, & Walach, 2004).

2.9.3.1. Programme Content

Traditionally, taught in a group setting over an 8-week period of two and a half hours per meeting, participants are initially, in the first weeks of the programme, taught to: stabilise the attention, notice the wandering mind's patterns and increase the capacity of the mind to return to focus awareness on a pre-determined focal or anchor point when mind wandering occurs. A range of formal practices are introduced within this time which include: mindful eating, mindfulness of breath and body, the body scan and the body in movement (Parsons et al., 2017). Each week different themes encourage the daily exploration of mindfulness in different areas of life: food, relationships, stress and work.

Later formal practices teach participants to: observe this process in more detail, approach uncomfortable mental content or physical sensations and to use a curious, accepting and non-judgmental in the process. These formal practices include mindfulness of sounds, thoughts and mental events. As the programme comes to a close, participants are encouraged to develop their own formal mindfulness practices in order to sustain themselves (Parsons et al., 2017).

2.9.3.2. Shared Community

Utilisation of interactive exercises encourage the sharing of experiences and an opportunity to get to know each other during the programme. This leads to participants feeling safety and part of a community (Malpass, Binnie, & Robson, 2019). Despite diverse reasons for attending MBSR classes, participants are welcomed with 'You are more than your diagnosis. There is more right with you than wrong with you' (Cullen, 2011, p.5) and encouraged by the possibility of interacting with others who are different, to see that each has a desire to be happy, and healthy with similar challenges

(Malpass et al., 2019). MBSR's supportive group experience strengthens relationships between participants (Epstein & Krasner, 2013; Rosenweig, Reibel, Greeson, Brainard, & Hojat, 2003), with enhanced belonging instead of feeling isolated (Irving et al., 2014), and partially mediates the effect of the programme on mood and stress symptoms when compared with Supportive Expressive Group Therapy (Schellekens et al., 2017).

2.9.3.3. Teacher as Steward

There is a description by Kabat-Zinn (2011) of what takes place during mindfulness practice, as

> 'ultimately, not merely a matter of intellect or cognition or scholarship, but of direct authentic full spectrum first-person experience, nurtured, catalysed, reinforced and guided by the second-person perspective of a well-trained and highly experienced and empathic teacher … within a non-authoritarian, non-hierarchical perspective that allow (s) for clarity, understanding, and wisdom to emerge in the interchanges between instructor and participants, and within the medication practice of the participant as guided by the instructor' (p.292).

The process of 'enquiry' is the process through which a participant is invited by the teacher to explore, comment or reflect on their experience (Segal et al., 2013). It is during this time that a variety of practice-related challenges are discussed within the group. Some of these may be in relation to the right way to practice, the approach to managing painful sensations, sporadic (or no) daily practice, as well as boredom and enjoyment of mediation as a way to relax. Participants may also worry about trying harder to 'get it' and aiming to control a busy mind.

Although, sometimes experienced as intimidating by learner and teacher alike, the skill of enquiry has the potential to extend and enhance learning for all as attention is focused on not only direct experience of a practice but also, making sense of it within a personal context of understanding as well as contextualising it within the wider context of the aims of the programme (learning to recognise stress, preventing overwhelm and increasing wellbeing).

From a place of ‘not-knowing’, with a curious, open and calm appraoch, the teacher asks about a participant’s experience, enquiring about the details of an experience without judgment. The significance of the teacher embodying these attitudes is important when any experience is explored but particularly as an unpleasant experience is recounted and processed as it provides an example of how it is possible to be in a different relationship to, not only this particular challenge but also to life (Segal et al., 2013).

Like Kabat-Zinn (2011), Santorelli (1999) and McCown, Reibel, and Micozzi (2010) also refer to the interaction between participants and teacher. Santorelli (1999) describes it as a ‘parallel, alchemical process transpiring within myself as a health care professional and within those I serve… when we are joined in the crucible of mindfulness’ (p.2). Santorelli (1999) encourages health professionals to face their own vulnerabilities as during the process of learning to explore those areas of ourselves, our experiences and in others that which we reactively turn away from exploring, we rely on the support of each other to turn towards it instead.

McCown et al. (2010) speaks of the co-creation which occurs between teacher and participants in which ‘all are contributors to the maintenance of the mindfulness, the inter-subjective resonance, of the group’ during which time, the teacher provides a safe space in and ‘stewardship’ for, this work to be done. Stewardship includes participants’ experience of freedom to be and express themselves and to feel that they and their experiences belong to the group as they support and assist each other with challenging experiences (both physical and psychological). Epstein (2020) highlights the importance of the teacher’s learned skill of deep listening, small group processes, practical wisdom and embodiment.

For the teacher to be able to do this, the importance of personal practice cannot be overemphasised. As described by Crane (2014, p.5)

> ‘the instrument for this craft of teaching mindfulness is ourselves. Many of the competencies that we are developing are deeply personal... The way we tune the instrument and develop our skills to draw the best from this instrument is to bring mindful attention to our experience both in everyday life and during formal meditation practice… it is a lifelong journey’.

We learn to ‘teach who we are’ (Palmer, 1997, p.2; Epstein, 2020).

As a teacher’s personal practice reflects their understanding of themselves and is reflected in their teaching so too, do participants learn to relate to themselves. Segal et al. (2013) point out that ‘mindfulness cannot be reduced to awareness or attention alone’ (p.137). The process of change which takes places is dependent on whether an approach of kindness and compassion can be the lens through which we attend.

Training and ongoing mentoring is significant in this process (Epstein, 2020). As steward, the responsibility of the teacher is to have undergone appropriate training for the programme they are facilitating and to continue with professional development. Apart from instruction and the application of knowledge, it is imperative that the teacher be aware of physical and psychological challenges which participants may experience and how to manage them appropriately. Careful screening prior to participation and pre-course interview provides an opportunity to explain what is entailed in the course with the clarification of expectations – these are an important part of creating the safe container. For some, participation at a particular time, may not be appropriate and this can also be addressed during the pre-course interview. For others, participation may agitate unpleasant thoughts and feelings leaving them feeling unsettled with increased perceived stress at course completion (Dobkin, Irving, & Amar, 2011).

Dobkin et al. (2011) report participants’ increased awareness of areas of their emotions, relationships and life circumstances which are working, and others which may not be working as well as they can be. As time is spent in practice, encouragement is given to ‘be with’ whatever is arising. RUMI in Santorelli, (1999, p. 19) advises:

> *Don’t turn your head.*
>
> *Keep looking at the bandaged place.*
>
> *That’s where the Light enters you.*

This is contrary to avoidance coping strategies previously employed to manage unpleasant thoughts, feelings, body sensations and impulses to act. There is a period of adjustment to and integration of this new approach particularly when insight has triggered additional discomfort.

2.9.3.4. Adaptations of MBSR

Since its inception thirty-nine years ago, MBSR has been adapted for Mindfulness-Based Interventions (MBIs) to address the effects of both physical and psychological challenges as well as a variety of specific diagnoses (depression, anxiety) and conditions (pain, cancer and heart disease) (Crane, 2017; Hofmann, Sawyer, Witt, & Oh, 2010; Grossman et al., 2004). Instead of having to manage the consequences of long-term illness and stress, wellbeing is improved with increased emotional awareness and ability to cope, enhanced self-efficacy and a better quality of life (Grossman et al., 2004).

2.9.4. Mindfulness Based Cognitive Therapy

Mindfulness Based Cognitive Therapy (MBCT) is adapted from MBSR within an underpinning cognitive framework for those at risk of depressive relapse. Since depression is a recurring condition, those who have experienced it are vulnerable to future relapse as a result of increased sensitivity to low mood (cognitive reactivity) and the reactivation of habitual patterns of thinking learned in previous episodes. Learning to recognise negative rumination and low mood as aspects of an experience instead of a main aspect of self, encourages de-centering which helps to maintain long-term wellness (Crane, 2017).

MBCT is researched (and recommended by the UK's National Institute for Health and Clinical Excellence) as being an effective relapse prevention intervention in patients with recurrent Major Depressive Disorder (Piet & Hougaard, 2011; Kuyken et al., 2016), as effective as maintenance antidepressant medication for preventing depression relapse (Segal et al., 2010), reduced symptoms of anxiety and depression (Querstret, Morison, Dickinson, Cropley, & John, 2020) with benefits maintained past treatment completion (Hofmann et al., 2010). MBCT was shown to be more effective for patients with a history of adverse life experiences (Segal et al., 2013).

The therapeutic alliance played a significant role in predicting a reduction in psychological distress for participants of a MBCT for cancer patients (Bisseling et al., 2019). It was suggested that a common goal, distinct programme structure, accompanying audio files and prioritisation of self-care contributed to a positive

outcome and less attrition. For online programmes which are associated with high attrition, attention to therapeutic alliance may contribute to a lower dropout rate. For Bowen and Kurz (2012), participants' daily practice and participant-rated therapeutic alliance was predictive of mindfulness at the conclusion of a Mindfulness-Based Relapse Prevention course, but not two or four months later. Continued practice (formal & informal), level of social support for mindfulness maintenance and peer and family level of mindfulness were factors which may support longer term mindfulness changes over time. Peer support was identified as a key motivating factor for participants in a MBCT qualitative study. Support also contributed to a recognition of mutual challenges as well as a reflection of participant growth (Aalderen, Bruekers, Reuzel, & Speckens, 2012). Teacher embodiment of mindfulness, ability to teach an empowering problem reduction method and non-reactivity to previous problems, were highlighted as contributing to participants' programme completion.

MBCT has since been adapted for non-clinical populations in education, prisons, and corporate environments where the MBIs' focus is on general vulnerability factors (Silverton, Fennell, & Bartley, 2011).

2.9.4.1. Self-compassion in MBSR and MBCT

Self-compassion practices are implicit in MBSR and MBCT programmes with a fundamental understanding that practices, enquiry and teaching of mindfulness take place within a frame of kindness, friendliness and compassion which is embodied by the facilitator (Segal et al., 2013). Explicit loving kindness practices were excluded from MBCT as there is a risk that in someone with a clinical disorder, the phrases might trigger endeavours to achieve 'happiness' or 'freedom from harm' with associated negative feelings of past failures to do so or anxieties about not being able to achieve them in the future. For Kabat Zinn, the embodiment of lovingkindness in the teacher and context of MBSR, in which 'the very act of gently turning toward and attending to the present moment is a powerful gesture of kindness and self-care' (p. 285, in Segal et al., 2013).

Studies are showing that having self-compassion increases mindfulness, well-being and resilience with lower rates of depression, anxiety and stress (Stutts, Leary, Zeveney, & Hufnagle, 2018; Neff & Germer, 2013; MacBeth & Gumley, 2012; Barnard

& Curry, 2011) and compassion (Mills & Chapman, 2016). Increasingly, explicit loving kindness practices are being incorporated into MBIs or specific programmes are offered which have been designed around the development of self-compassion (Mindful Self-Compassion Programme (MSc) by Christopher Germer & Kristin Neff, www.self-compassion.org).

Stutts et al.'s (2018) longitudinal study with university students noted that high self-compassion moderates the effects of perceived stress, by tempering its association with anxiety, depression and negative affect on an ongoing basis. The study suggested that 'high self-compassion provides emotional benefits overtime, partly by weakening the link between stress and negative outcomes' (p. 609).

A brief (3-week) self-compassion intervention for women students showed significantly greater increases in self-compassion, mindfulness, optimism and self-efficacy with significantly reduced rumination in comparison to the active control (Smeets, Neff, Alberts, & Peters, 2014). Stutts et al. (2018) note that students with high levels of self-compassion might, instead of pulling themselves down with rumination and negative self- judgment (maladaptive emotion-regulation coping) remind themselves that all make mistakes if they performed poorly in an assessment and to enhance future wellbeing by working more efficiently for future assessments.

In a study to establish normative data for the SCS-sf for College Counselling Centre clients', male undergraduates were found to have small but statistically significant more self-compassion than female undergraduates (Lockard, Hayes, Neff, & Locke, 2014) and students who had previously received counselling reported significantly lower self-compassion than those receiving psychological intervention for the first time. It was noted that promoting self-compassion in the students with long-standing mental ill-health might require more time because of the presence of self-criticism, sense of isolation and over-identification with their problems.

Research has shown that individuals requesting assistance with anxiety issues report lower self-compassion in comparison to outpatients with depression or recurrent depression (Lockard et al., 2014). It was suggested that people who are anxious are frightened of making mistakes as without lack self-compassion, they struggle to forgive themselves when they do. In turn, this heightens anxiety whereas in people who are depressed, it does not.

2.9.4.2 Backdraft

As participants in a MBI gain insight into positive and negative aspects of their existence, 'backdraft' is the term used to describe intense pain which may result when participants or clients are exposed to self-compassion practices. Receiving unconditional love can trigger memories of being unloved previously and can result in fear and anxiety from experiencing compassion in this way. This can be so with individuals with a history of child abuse or neglect as it triggers grief in relation to the experience or lack thereof of affection and care from significant others (Warren, Smeets, & Neff, 2016). Teachers' awareness of backdraft can ensure that techniques are taught to self-stabilise if overwhelming emotions do arise during kindness-based meditation, before it takes place – not to create fear but so that participants to whom it happens aren't overwhelmed by the experience. In explanations, fear is normalised as part of the healing process.

2.10. Mindfulness- Based Interventions in Education

2.10.1. MBIs with Teachers, Learners and Students

It was noted in Querstret et al. (2020) that when nonclinical samples of MBIs were compared with inactive controls, they had less symptoms of rumination/worry; stress/ psychological distress; depression and anxiety and increased quality of life /well-being; mindfulness and facets of mindfulness.

Beshai, McAlpine, Weare, and Kuyken (2015) study's results indicate the efficacy of an MBI, the '. B Foundations Programme' to help teachers manage stress and increase well-being. Similarly, results from Galante et al. (2018) indicate that mindfulness training for students could play a positive role within a wider student health strategy to maintain mental wellbeing with resilience to stress. Bamber and Schneider's (2016) narrative review of the regular use of mindfulness practice to decrease perceived stress and anxiety noted that 77% reported significant decreases in anxiety and 78% in perceived stress. The results for reductions in physiological stress reduction were inconsistent and further research in this area was recommended. Additional benefits of improvements in learning efficacy as well as cognitive performance's attention and memory were reported in the effects of a

mindfulness meditation course with university students in Taiwan (Ching, Koo, Tsa, & Chen, 2015).

MBI programmes which were based on the self-help book for non-clinical populations by Williams and Penman (2011) (which is based on MBCT) have shorter practices and habit breakers for non-clinical populations. These have shown promise in helping teachers and students (Besahi et al., 2015; Galante et al., 2018) manage stress and increase wellbeing. In particular, it is the shorter, simple meditation practices as well as the reduced meeting times and programme length which are significant features of these adapted MBI's. Unlike traditional MBSR and MBCT programmes with implicit self-compassion practices, Williams, Penman and Cullen's programme includes several explicit self-compassion practices.

Beshai et al. (2015) and Carmody and Baer (2009) both note the feasibility of a reduction in programme length and session time for time-constrained populations who might otherwise be precluded from participating in a programme to reduce psychological distress. The strength and suitability of Williams and Penman's book for use within educational environments was noted (Beshai et al., 2015).

Training in the practice of mindfulness involves training in attention regulation and is regarded by students as an acceptable, non-stigmatising approach to reduce stress and increase a sense of well-being in scholars and educators (Galante et al., 2016; Beshai et al., 2015; Meicklejohn et al., 2012) and to prevent depression and anxiety in clinical and nonclinical populations (Kendrick & Peveler, 2010 in Galante et al., 2016) as well as students (Regehr, Glancy, & Pitts, 2013; Draper-Clarke & Edwards, 2016). Furthermore, Galante et al.'s (2018) study indicated the benefit of mindfulness interventions for tertiary students as part of an expanded student health strategy to engender resilience to stress (Galante et al., 2018).

2.10.2. Phases of Change in Participants' Mindfulness Experience

Monshat et al. (2013)'s study with young people (age 16-24), describes the process of change through which participants' relationship with mindfulness occurs.

Initially, prior to a mindfulness practice, in phase 1, there is 'distress and reactivity'. Then, during phase 2, as participants begin to practice the experiential practices of

mindfulness, they 'gain stability'. Mindfulness is used as a stress management tool/technique to relax, sleep and become calm. With continuing practice, an awareness develops of an ability to choose the way they respond to a situation over which they might not necessarily have control, increasing personal agency.

In Phase 3, and with regular mindfulness practice, 'insight and application' of mindfulness occurs with noticeable increased clarity of mind, self-awareness and self-reflection. This affects positively, interactions with self and others because of a change in perception. With a focus on the process, instead of content, stress, in all its capacities, is managed more effectively.

2.10.3. MBIs with International Medical Students

As described before, there is an awareness of the exacting consequences of medical student stress at university and in their professional careers. Research has shown that mindfulness-based interventions are beneficial for medical students to lower psychological distress (Dobkin & Hutchinson, 2013; Rosenweig et al., 2003); reduce anxiety, depression as well as to increase empathy and a greater sense of spirituality (Shapiro, S. et al., 1998). A longitudinal study with medical and psychology students reported six-year positive effects of increased wellbeing and problem-focused coping with the probability of avoidance-focused coping decreased (de Vibe et al., 2018). These results were noted despite relatively low adherence levels to formal practice with a small relationship between quantity of formal practice and positive treatment outcomes reported (Parsons et al., 2017). An abridged 75-minute, weekly MBSR programme for first year students noted improvements in perceived stress and self-compassion despite relatively low home meditation rates, with the suggestion that this may be worthwhile incorporating into students' curricula to improve wellbeing and professional development (Erogul, Singer, McIntyre, & Stefanov, 2014).

Dobkin and Hutchinson's review (2013), noted that 14 medical schools offer mindfulness for medical students with two having integrated mindfulness training into the medical curricula. Most trainings are offered on an elective rather than a mandatory basis with important implications regarding students' motivation and willingness to engage with the learning process. Student motivation was highlighted in Aheme et al. (2016) where Year 1 medical students (compulsory course) rated a 7- week MBSR

programme content and programme outcomes as less satisfactory than Year 2 medical students (voluntary course). The importance of considering individual needs and the creation of a safe space were identified as primary components of a beneficial self-care programme.

Studies reviewed in Dobkin and Hutchinson (2013) indicated decreased psychological distress in students who have participated in mindfulness-based programmes. Their review recommended qualitative research to complement existing quantitative outcome research to explore essential course components. The General Medical Council (GMC) of the United Kingdom which is responsible for the maintenance of educational standards for students and doctors, has recommended training in the practice of mindfulness to promote positive mental health and resilience to stress (GMC in Malpass, Binnie, & Robson, 2019). In addition, knowledge of and experience in mindfulness training during medical school indicated the likelihood of personal use and recommendation of MBIs than those without this exposure (McKenzie, Hassed, & Gear, 2012). In a 5-year longitudinal study, Warnecke, Ogden, Bentley and Nelson (2017), results indicated the sustainability of mindfulness for stress management with possible long-term benefits for doctors.

2.11. South African Tertiary Education and MBIs

Within the context of South African tertiary education, a significant association between mindfulness and psychological well-being was shown in a group of black African students and their relatives. It was suggested that mindfulness may be a serviceable concept within South Africa's culturally diverse tertiary education environment. The findings also suggest that current MBIs for well-being may be appropriate across cultures (Nell, 2016).

The literature on mindfulness-based interventions with South African students in tertiary education is limited. Whitesman and Mash (2016) used a qualitative study to examine professionals' participation in a mindfulness-based professional teachers' part-time training and its impact on personal and professional functioning. Students self-reported significant changes resulting from daily practice with increased self-awareness, self-acceptance, improved self-regulation and relationships as well as enhanced self-compassion and compassion for others.

Draper-Clarke & Edward's (2016) qualitative study reported 14 education student's lived experiences of stress in which it was noted that mindfulness training is able to promote enhanced resilience in the students' stressful life experiences. In a quantitative study, Steyn, B., Steyn, M., Maree, and Panebianco-Warren (2016) investigated the benefit of mindfulness-based training on psychological wellbeing of music students. Results suggested an overall improvement in psychological wellbeing (self-confidence) and in relationships with others. The potential of mindfulness as a resource for the management of performance anxiety during high performance activities was noted.

2.12. Health and Well-being Internet-based Interventions

'The digital revolution is evolving at an unstoppable pace' (Bucci, Schwannauer, & Berry, 2019, p. 277). Parallel to this unprecedented growth, as mental health issues increase and wellbeing decreases, the provision of mental health care by global public health systems are struggling to keep abreast with the provision of care (Bucci et al., 2019; Lewis, Pearce, & Bisson, 2012). Many people have limited access to medical assistance and yet, technological innovations, facilities and systems as well as increased access to smart phones may provide cost effective solutions to address this growing public health concern (Bucci et al., 2019, Morledge et al., 2013).

2.12.1. Aims of Internet-based Interventions

Internet-based Interventions (IBIs) vary in their aims: to treat a mental disorder (Dimidjian et al., 2014; Ly et al., 2014), prevent its development (Bucci et al., 2018) and/or to promote wellbeing (Taylor, Leslie, & Boddie, 2017; Mak, Chio, Lui, & Wu, 2017; Aikens et al., 2014). Lewis et al. (2012) assessed self-help intervention's impact, cost-effectiveness and acceptability for anxiety disorders, and noted a significant effect for self-help interventions when compared to waitlist control. Interventions including CBT approaches have been included in websites and apps to address a variety of issues like early identification of early relapse factors associated with psychosis (Bucci et al., 2018) and the promotion of wellbeing in young adults (Taylor et al., 2017).

2.12.2. Accessibility

IBIs for mental health and wellbeing are accessed from a secure website with a password for a limited time in order to access psychoeducational material relevant to their difficulties. The information (including homework assignments) is uploaded in a specific order of modules or lessons. IBIs participation includes regularly completing presenting problem-relevant online questionnaires during the course for the monitoring of progress, safety and outcomes (Andersson & Titov, 2014).

2.12.3. Structure of IBIs for mental health and wellbeing

Interventions may include therapist contact in real or delayed time, participant-contact via telephone, video or messenger services or no therapist contact/ input (Andersson & Titov, 2014; Lewis et al., 2012). Comparison of self-help with interventions facilitated by therapists noted a significant difference in favour of therapist facilitated-interventions with the addition of facilitation/ guidance and multimedia/ web-based self-help information improving adherence and treatment outcome (Lewis et al., 2012).

2.12.4. Advantages of IBIs for mental health and wellbeing

Online delivery of health and wellbeing interventions have become popular as they offer a number of advantages over face-to-face interventions. These advantages include: flexibility, convenience (no travel time, accessible from familiar surroundings), quicker provision of care without long waiting lists, potentially less costly and reduced stigma associated with a mental health condition (Andersson & Titov, 2014). Furthermore, online platforms enable self-monitoring and self-management of mental health issues (Bucci et al., 2019).

2.13. Internet -Based Mindfulness-Based Interventions (IB-MBIs)

2.13.1. General Population

With the benefits of contact MBIs being shown to significantly reduce psychological distress related to various conditions in clinical and nonclinical groups (including

anxiety, depression and perceived stress) and the success of IBIs for mental health and wellbeing, increasingly, there are Internet-Based Mindfulness-Based Interventions (IB-MBI) being delivered to address these too (e.g. Bailey et al., 2018; Jayawardene, Lohrmann, Erbe, & Torabi, 2017; Krusche, Cyhlarova, & Wiliams, 2013; Ly et al., 2014). Interestingly, 42% of participants in a cross-sectional survey with 500 adults indicated their preference of an Internet-based mindfulness format (Wahbeh, Svalina, & Oken, 2014).

2.13.2. Structure of IB-MBIs

The format of interventions varies with regard to: instructor-led practices (Querstret, Cropley, & Fife-Schaw, 2018; Krusche et al., 2013) or not (Gluck & Maercker, 2011; Morledge et al., 2013); virtual classes with accompanying online applied training (Aikens et al., 2014; Ma, She, Siu, Zeng, & Liu, 2018) or self-directed through a programme with minimal contact (access to an e-coach via email) or no contact with participants (Ma et al., 2018; Danilwitz et al., 2018; Morledge et al., 2013; Gluck & Maercker, 2011; Warnecke, Quinn, Ogden, Towle, & Nelson, 2011). Programmes may vary from 2 weeks (Gluck & Maercker, 2011); 15 days (Halamova, Kanovsky, Jurkova, & Kupeli, 2018); 8 weeks (Warnecke et al., 2011); 7 sessions (Aikens et al., 2014); 10 sessions (Krusche et al., 2013) or 12 sessions (Morledge et al., 2013) in order to decrease varied difficulties like perceived stress, self-criticism, depression and anxiety and/or to enhance resilience and wellbeing as well as to improve work engagement.

Schultchen et al. (2020) recommend offering booster sessions at 4 and 12 weeks, following a 7- week programme in order to increase the maintenance of the effects of the intervention.

2.13.3. Content of IB-MBIs

Typically, IB-MBIs use simplified and/or MBSR (Jayawardene et al., 2017, Aikens et al., 2014; Kvillemo, Brandberg, & Branstrom, 2016; Kemper & Yun, 2015) and MBCT programmes (Dimidjian et al., 2014; Ma et al., 2018; Querstret et al., 2018; Wahbeh & Oken, 2016). Others are specifically developed Internet-based programmes like ‘Learning Mindfulness Online’ (Cavanagh et al., 2013), ‘MIND-MED’ (Danilewitz et al.,

2018), 'iMIND' (Mak et al., 2017) and 'StudiCare Mindfulness' which includes a combination of Acceptance and Commitment Therapy (ACT), MBSR, stress management and CBT (Schultchen et al., 2020).

Like contact MBIs, the foundation of IB-MBIs includes the development of a regular mindfulness practice with exercises like breathing, body scan and mindful yoga practices included with a variety of downloadable audio files. Homework diaries help participants to keep a record of their practices and offer an opportunity to reflect on these. Sessions vary in length from 25-35 mins (Danilewitz et al., 2018); 60 mins (Schultchen et al., 2020) to 2 hours (Ma, et al., 2018).

2.13.4. Results of IB-MBIs

Spijkerman, Pots, & Bohlmeijer's (2016) review and meta-analysis evaluating the particular effects of online MBIs on positive mental health, noted that research in this area, although limited, indicates the potential of these programmes to improve mental wellbeing outcomes, particularly stress in the moderate range (similarly, Jayawardene et al., 2017). Significant decreases in perceived stress, anxiety (Spadaro and Hunker, 2016; Warnecke et al., 2011), self-criticism and self-uncompassionate responding (Halamova et al., 2018) as well as depression (Krusche et al., 2013) have been reported. A small effect size for wellbeing was noted (Spijkerman et al., 2016). Halamova et al., (2018) reported increased self-compassionate responding in the short-term but not present two-months later. Medium effect size for mindfulness at follow-up suggested that mindfulness skills which were learned in IB-MBIs were developed slowly and maintained (Jayawardene et al., 2017).

It was noted that for stress, effect size was positively influenced by the number of sessions – more sessions resulted in higher effect sizes (Spijkerman et al., 2016) as did guided online MBIs than unguided MBI on stress and mindfulness (Spijkerman et al., 2016).

In specific populations, volunteer health professionals readily enrol for brief online mindfulness training with significant increases in mindfulness scores (Kemper, 2017). A significant reduction was noted in perceived stress and higher resiliency rates, (post intervention) in a certified MBSR instructor led-mindfulness intervention group for

general employees compared to a waitlist control following a 7- week online intervention (Aikens et al., 2014).

Exploratory subgroup analyses for stress and mindfulness indicated higher effect size for IB- MBIs with therapist guidance than those without (Spijkerman et al., 2016). Contrary to Spijkerman et al. (2016), results of two 4-week, self-guided interventions with teacher-led practices (and no contact with participants) with significant reductions in perceived stress, anxiety and depression at programme completion and effects maintained at follow-up (Querstret et al., 2018; Krusche et al., 2013). Large effects on perceived stress for participants were reported by those who participated regularly (Gluck & Maercker, 2011).

In one of the few studies with an active control, Ma et al. (2018), results indicated the potential efficacy of IB-MBIs to reduce anxiety and depression as well as the importance of group support. In this study, group mindfulness-based intervention, self-directed mindfulness-based intervention, discussion group and inactive control were compared. Group MBI results indicated significant group membership effects on mindfulness, depression and anxiety. Interestingly, the discussion group indicated a significant mindfulness effect. This was similar to Schelleken et al. (2017) who noted that both MBCT and supportive expressive group therapy improved participants' levels of mindfulness. It was suggested that as a result of discussions, about emotion states and tools to manage them, participants are better informed and more sensitive to their emotions. However, unlike an MBI, and despite the supportive environment and increased skills, discussion group participants do not learn to apply mindfulness as an adaptive strategy to attend to negative emotions (Ma et al., 2018).

2.13.5. Attrition

Unfortunately, high attrition rates have been reported for IB-MBIs (Bailey et al., 2018; Mak et al., 2017; Jayawardene et al., 2017). Jayawardene et al. (2017) recommended the inclusion of tailored professional feedback to enhance adherence despite the cost financially and in terms of human resources.

2.14. Internet-Based Mindfulness Interventions and Students

IB-MBIs are an increasingly popular way to introduce stress-reduction methods for students (Gu, Cavanagh, & Strauss, 2018; Loiacono, Fulwiler, Cohanim, & Davis, 2018; Forbes, Gutierrez, & Johnson, 2017; Mak et al., 2017; Kvillemo et al., 2016; Spardaro & Hunker, 2016, (nursing students); Cavanagh et al., 2013). One of the reasons for their popularity for students is because students are familiar with accessing information online (Maples & Han, 2008). It was noted that the majority of college student participants who experienced stress, depression and anxiety and had participated in an MBI, supported the use of an app on a smartphone with guided practices together with contact sessions in order to encourage regular mindfulness practice and reduce perceived isolation. An app was preferred to guided practices on YouTube or Facebook/Twitter (Loiacono et al., 2018).

2.14.1. Results of IB-MBIs for Students

Gu et al. (2018) examined the effects of a 2-week IB-MBI, self-help intervention group with a well-matched, classical music control as well as a waitlist control on perceived stress in a group of university students and staff. In comparison to both control groups, IB-MB self-help was reported as significantly reducing stress. Moderate to large effects improvements in perceived stress, mindfulness and self-compassion were reported with reduced worry in comparison to both controls. Study attrition was high as just over half of participants completed online measures at three time points.

Kvillemo et al. (2016) compared a self-directed, 8-week, MBSR-adapted mindfulness programme intervention with an active control assigned to a self-directed 4-week expressive writing programme. Although the intervention group reported high satisfaction with the programme, this was not statistically significant. Like many Internet-based programmes, there was a high attrition rate and it was suggested that more frequent contact from the co-ordinators would improve programme adherence and completion.

In a RCT comparison between an 8-week, certified mindfulness-trainer led, Internet-based mindfulness training programme (iMIND) with an Internet-based cognitive - behavioural therapy programme (iCBT) to promote mental health of young working

adults and college students, it was noted that both programmes demonstrated potential to improve mental health from pre- to post assessment which was maintained 3 months later (Mak et al., 2017). Both internet- based programmes were reported supportive in terms of utility, satisfaction and efficacy in promoting mental health in a convenient way.

High attrition rates have been reported in some student studies too (Forbes et al., 2017; Mak et al., 2017; Cavanagh et al., 2013) Barriers to adherence included motivation, sleepiness, distraction and experiencing practices as an additional task to be completed as well as the supposition that participants new to mindfulness have unmet expectations after enrolment (Forbes et al., 2017).

2.15. Internet-Based Mindfulness Interventions and Medical Students

IB-MBIs are becoming increasingly popular for medical students who are time constrained and may not be on campus for contact sessions (Moore et al., 2020; Malpass et al., 2019; Danilewitz et al., 2018) or for whom, mindfulness interventions are not offered by the university (Kemper & Yun, 2015).

2.15.1. Results of IB-MBIs for Medical Students

For rurally located medical students, associated reductions in participants' perceived stress at four-month follow up and increased self-compassion at programme completion (Moore et al., 2020). Although there was no statistically significant change reported in compassion levels, qualitative essays reported increased levels of compassion. It was suggested that this lack of statistical change was because participants had not had sufficient time to integrate the content and meditations into their lives before the programme was completed. Self-report essays suggested that the practice of mindfulness was used by participants to self-distract from stress instead of actively managing it (through the practice of acceptance and de-centering from distressing thought patterns).

2.15.2. Benefits of IB-MBIs for Medical Students

Benefits included increased awareness and presence, increased self-compassion as well as compassion for others as well as enhanced emotional regulation and improved use of stress management strategies. Average rate of practice per week was once a week –less than more regularly reported formal practice rate (as well the inclusion of informal practices into daily life) by students who had experienced regular contact with facilitators in the University's setting (Moore et al., 2020).

2.15.3. Barriers to practice

Barriers to practice for medical students include difficulties experienced in prioritising mindfulness practice as a result of time constraints or disliked content, difficulties experienced in remembering to practice every day and feeling too stressed (Moore et al., 2020; Danilewitz et al., 2018).

2.16. Study Rationale

This feasibility study was prompted by an awareness of a need for studies which explored possible complements for students (Daya & Hearn, 2018; Bullock et al., 2017; Redhwan et al., 2009; Stewart et al., 1995), particularly those which are undertaken with South African students (Colby et al., 2018; Van Zyl et al., 2017; Naidoo et al., 2014), to provide information to enable students to reduce stress, to increase self-compassion and resilience as well as to plan curriculum (Tin Maung Maung, 2017; Rogers, 2016; Roussouw, L., et al., 2013).

2.16.1. Pilot Study

Thabane et al. (2010) describe a pilot and feasibility study's purpose is to guide the planning of a large-scale investigation through the assessment of intervention safety, recruitment potential, retention, new methods and increase clinical experience with the implementation of an intervention. A pilot and feasibility study also assesses the intervention on a small community representative sample for whom the programme is planned (Bless, Higson-Smith, & Kagee, 2006). Conducting this prior to a future

definitive trial can increase the likelihood of the main study's success thereby saving time and costs. By comparison, a main trial's purpose is to establish a new intervention's effectiveness or efficacy based on a statistically significant result.

Since there is a lack of data from South African based studies to: generate data for sample size calculations, ensure recruitment, randomisation, treatment and enable follow up assessments to proceed smoothly (Arain, Campbell, Cooper, & Lancaster, 2010) to inform the design of a future definitive RCT (Eldridge et al., 2016), it would be fitting to conduct a randomised pilot study to establish this information before embarking on a larger, main study.

Randomisation of participants ensures that each participant 'has an equal chance of being assigned to any of the groups or arms of the study' (Bless et al., 2006, p.83). This can be achieved once the entire group of participants has been identified and they can be randomly divided into two or more groups using a random number generator. When groups are divided in this way, they are more likely to be equal and the results of the study's sample can be generalised to all participants in the population group, thereby enhancing the study's external validity.

It was fitting to conduct this randomised pilot study to establish this information prior to a main study in order to: generate data for sample size calculations, ensure recruitment, randomisation, treatment and enable follow up assessments to proceed smoothly (Arain et al., 2010) to inform the design of a future definitive RCT (Eldridge et al., 2016).

2.16.2. Primary Aim

To investigate the benefit of a six- week mindfulness-based intervention for medical students to optimise mental well-being, increase self-compassion and resilience to stress when compared with supportive counselling.

2.16.3. Secondary Aim

To assess the feasibility of conducting a larger study.

2.16.4. Primary Hypothesis

The provision of a six-week mindfulness intervention would reduce students' psychological distress and increase self-compassion in comparison to the provision of a six-week supportive counselling programme during the semester in which they participated in the programme. If the intervention's students noted reduced distress and increased self-compassion following the intervention's conclusion and eight weeks later, the intervention would be regarded as an indicator of resilience to stress.

2.16.5. Null Hypothesis

The null hypothesis for the study was that the provision of mindfulness training would have no significantly different effect on medical student distress or self-compassion during the semester of the intervention when compared to those who received supportive counselling.

2.16.6. Primary Objective

The primary objectives were to increase students' well-being, self-compassion and resilience to stress.

2.16.7. Secondary Objectives

The secondary objectives were to assess, collect and synthesise data for the estimation of a definitive RCT. This included recruitment, attendance and retention rates, participant compliance with home practices and on-line questionnaire completion. The study also examined the experience of participation in mindfulness for medical students qualitatively.

Initially designed with face-to-face intervention and active groups, contact sessions were suspended due to the implementation of COVID-19 restrictions in South Africa.

2.17. COVID-19

At the end of 2019, cases of pneumonia of unknown source were reported from Wuhan, China. This new strain of coronavirus (2019-nCoV) was named COVID-19 virus. By 11 March 2020, the rapid spread of cases and high mortality rate throughout the rest of the world led WHO Director-General Dr Tedros Adhanom Ghebreyesus to categorise the outbreak as a pandemic (WHO, 2020a). In order to contain the virus, prevent its further transmission and to provide health systems opportunities to upscale facilities and acquire resources, many countries responded with periods of lockdown for their citizens (WHO, 2020b). This global lockdown has slowed the global economy with a strong possibility of a global recession (Ojo & Onwuegbuzie, 2020).

South Africa's first case of COVID-19 was reported 5 March 2020. South African educational environments were closed on the 18th March (Ojo & Onwuegbuzie, 2020) and by 26th March, the country had been placed in level 5 lockdown. These stringent measures as well as increased testing and contract tracing were taken in an effort to slow the rate of transmission, contain the virus, provide time for the ailing South African Health care system time to increase resources and to prepare limited critical facilities (Madhi et al., 2020). It took into account that many of South Africa's young population would be vulnerable to COVID-19 as a result of HIV and TB treatment as well as the effects of malnutrition in the country.

Although South Africa was applauded globally for its swift response to the pandemic, the consequences of the severe lockdown have had unintended negative consequences for the economy and the South African community. These have included widespread severe job losses, limited social relief and extensive business closures (Madhi et al., 2020, De Villiers, Cerbone, & Van Zijl, 2020). Social consequences are: an increase in violence against women and children, reductions in HIV and TB testing and treatment adherence (Madhi et al., 2020) and increased mental health problems like post-traumatic stress disorders, anxiety, depression and insomnia (Semo & Frissa, 2020).

Spiralling government debt has seen the economy contract 7.2% and is anticipated that as a consequence, a budget deficit equivalent to 6.8% of the GDP will occur. Debt servicing costs are the equivalent to health care expenditure (Mboweni, 2020b in De

Villiers et al., 2020) and it remains to be seen how this will impact health care expenditure, including public health doctor's posts.

2.17.1. Impact of COVID-19 on Students' Mental Health

The consequence of the worldwide COVID-19 lockdown has been a decrease in population mental health with increased psychological distress, symptoms of mental illness, and disrupted sleep patterns. Marelli et al. (2020) note the impact of Italy's lockdown being greater in students than workers, and in females than males. Depressive or anxious symptoms were reported by approximately one third of participants with disrupted sleep routines, worsened quality of sleep and insomnia symptoms. University students similarly reported increased anxiety as well as moderate to severe stress during the lockdown period in France. Students who did not return to their families at this time, were disproportionately affected (Husky, Kovess-Masfety, & Swendsen, 2020). Similarly, Cao et al. (2020) reported that living with parents, in an urban area and family income stability were protective factors in students experiencing less anxiety than those without these factors. Stressors for United States' College students' increased stress, anxiety and depressive thoughts during the pandemic included fear and concern for self and loved ones, disrupted sleep routine, decreased social interactions and worry about academic performance (Son, Hegde, Smith, Wang, & Sasangohar, 2020).

In South Africa, at the time of lockdown, without a vaccine and uncertainty regarding the duration of COVID-19, online learning with the resumption of lectures and assessments was announced for some tertiary education facilities in order to save the academic year (Ojo & Onwuegbuzie, 2020). Students feared that the academic year would be lost (Maharaj, 2020). Universities worked with telecommunications companies to provide free mobile data packages for students as well as the procurement of laptops for those without. Final year students returned to clinical work from June 1st with level 3 lockdown being enacted (Maharaj, 2020).

2.17.2. Impact of COVID-19 on the Study

As a result of the enforced lockdown and continued consequences of the pandemic, ethical permission was sought and received to conduct the two programmes of the study online. This has resulted in pertinent information pertaining to the efficacy of internet-based interventions to reduce perceived stress, enhance wellbeing and increase self-compassion in medical students at Stellenbosch University, Tygerberg Campus which will be discussed in the following chapters.

CHAPTER 3: METHODOLOGY

3.1. Research Design

The research design is the overall structure of a research study which focuses on the type of study as well as the results that are expected from it. According to Mouton & Marais (1990), 'the aim of a research design is to plan and structure a given research project in such a manner that the eventual validity of the research findings is maximised' (p. 33). In order to do this, a research design is created 'to establish a relationship between the independent and dependent variables with a high degree of certainty. The potential of a design to achieve this aim is referred to as the validity of a design' (Bless et al., 2016, p. 93).

3.1.1. Fulfilment of Primary Aim and Primary Objectives

The primary aim of this evaluative, experimental, mixed-methods study was to investigate the benefit of a mindfulness-based intervention in comparison to supportive counselling. The way in which these were compared was through the facilitation of two online, six-week programmes conducted concurrently. Programme 1, the intervention, was Mindfulness-based and Programme 2, the active control, was Supportive Counselling. Participants were randomised between the two groups.

An active control was chosen instead of a passive control (mental health treatment as usual or waitlist) as there have been trials with passive controls which have been conducted (Galante et al., 2018; De Vibe et al., 2013). The lack of an active control in both these studies is described as a limitation. The inclusion of an active control with equal attention by the facilitator and regular weekly participation by participants, addressed this limitation.

In order to achieve the primary objectives of optimised mental well-being, increased self-compassion and resilience to stress in comparison to a supportive counselling programme, the intervention, Programme 1, was a mental training programme based on the secular, skills' training programme from the book: 'Mindfulness: A Practical Guide to Finding Peace in a Frantic World' (Williams & Penman, 2011). The book is an adaptation of MBCT which was originally developed to reduce the recurrence of depression and includes cognitive behavioural techniques (CBT). The programme

aimed to impart the skill of mindfulness practice through which orientation to internal experience was encouraged as it was arising in the present moment with the attitudes of non- judgment and compassion. In so doing, it is possible to learn to relate differently to maladaptive ways of managing stress.

The active control, Programme 2, was a supportive counselling programme based on a Rogerian psychotherapy model which aimed to encourage participants to share experiences, reactions and support for each other. The programme included psycho-education about stress and emotions to create an awareness of the impact that emotions can have on stress management. Supportive Counselling is believed to offer relief when talking about problems within a group context (Markowitz, 2014).

Participants were randomly allocated 2:1 in favour of Programme 1. This unequal distribution was chosen to assess the feasibility of a shortened programme (from 90 minutes to 60) because of student time constraints. It was also chosen to provide more students with an opportunity to experience a mindfulness-based intervention as the practice of mindfulness for stress-relief is not established at the University.

Randomisation was conducted by an independent person utilising computer-generated random numbers (commentpicker.com/team generator.php.) The researcher was blind to this process of random allocation. The independent person was blind to the participants. Participants were notified by the researcher by email to which group they had been allocated.

Those participants allocated to the Supportive Counselling group were offered an opportunity to participate in a mindfulness course in 2021 once data collection was completed. Since the programme is facilitated online, this would not exclude Year 6 participants who would have left Tygerberg Campus following completion of their studies (as was the case for the contact sessions).

Quantitative assessment was completed online at baseline, post-intervention and eight weeks later. Qualitative data was collected from a feedback form which was completed by participants following completion of the six-week course.

Although initially intended to be facilitated as a face-to-face study (as was, for one cycle), following cessation of contact sessions of the second cycle due to COVID-19

schedule 5 lockdown restrictions, HREC 2 ethical clearance was applied for and received, to offer the intervention online.

In comparing these two independent variables to affect the three dependent variables of: stress, self-compassion and resilience thorough statistical analysis as well as a self-reported questionnaire, it was possible to determine which programme was more effective in reducing stress and increasing self-compassion and resilience on a convenience sample of fulltime, MBChB Year 2-6 students.

3.1.2. Fulfilment of Secondary Aim and Secondary Objectives

In order to fulfil the secondary aim and objectives to assess the feasibility of conducting a larger study, the following steps were undertaken:

- Data for sample size calculations was generated by keeping a record of interested as well as participants who completed the programme.
- To recruit participants, bulk emails were sent to Year 2- 6 MBChB students and online information sessions were held.
- Participants were randomised by an independent person using a computer-generated random number generator.
- Retention of participants was encouraged through the offer of an additional online mindfulness course to supportive counselling participants once data collection was complete. Groups were maintained as small, closed groups and contact was made with absent participants.
- New methods were embedded with emailed session summaries which included daily home practice and calendar to record progress.
- Increased experience with the adapted programme included 2:1 randomisation in favour of the MBI and small group size which increased weekly repetition of the programmes.
- Email and WhatsApp messenger were used to remind participants of weekly sessions, submission of feedback form and completion of online measures.

3.2. Participants

Participants were undergraduate second-, third-, fourth-, fifth- and sixth- year medical students who were enrolled at the University of Stellenbosch Faculty of Medicine and Health, Tygerberg Campus, 2020. They were invited to participate in a mindfulness for medical students' pilot stress reduction programme.

Inclusion criteria:

- Undergraduate MBChB students, Year 2-6 (inclusive) currently registered as a fulltime student at Stellenbosch University.
- 18 years and older with no severe or moderate mental illness or crisis (Self-administered questionnaire, completed online)
- A willingness to be randomly allocated to one of the two programmes.
- A willingness and realistic ability to participate in 5 of the 6 sessions.
- A willingness to complete 10-15 minutes of home practice 5/7 days of the week.
- Access to a laptop/cell phone and data to participate in online sessions.

Exclusion criteria:

Anyone who was currently experiencing:

- Periods of severe depression or anxiety
- Severe mental illness
- Any serious mental or physical health issue which could impact on the participant's participation in the programme.

3.3. Sample Size

Although sample size calculation for a pilot study is difficult (since its function is primarily to assess feasibility with information gathered therefrom to inform sample size for a main study), Torgerson and Torgerson (2008) recommend a minimum sample size of 32 participants which enables the observation of one standard deviation difference between two randomised groups with 80% power.

Although small and imprecise, this would provide an indication of intervention efficacy as well as information for the main study.

3.4. Interventions

Programme Facilitation and Content

Both programmes ran concurrently and were structurally equivalent: group format and meeting online once a week for 60 minutes. Programme 1 participants were encouraged to complete 10-15 minutes of home practice for 5 of 6 days per week. Participants of Programme 2 were encouraged to practice one of the tools covered during each week. Both programmes were facilitated by the Researcher, a Registered Counsellor (HPCSA) and Certified Mindfulness Teacher (Stellenbosch University) with training by Chris Cullen (Oxford Mindfulness Centre) in the programme developed by Mark Williams and Chris Cullen from 'Mindfulness: A Practical Guide to Finding Peace in a Frantic World'.

3.4.1. Programme 1:

3.4.1.1. Structure

Each sixty- minute session for the six-week period consisted of a minimum of two experiential exercises with periods of reflection and enquiry related thereto and their relevance to stress and cognitive reactivity. There was an emphasis on adopting a non-judgmental & friendly attitude towards the self and others (Appendix 1, page 188).

3.4.1.2. Experiential exercises

The experiential exercises practiced included: awareness of breath, sitting practice, body scan and mindful movement. The 3 Step Breathing Space (3SBS) was introduced as a mini meditation, a bridge between the longer formal practices and the practice of mindfulness in everyday life. Other mini practices included: 'Feet on the floor', 'The Pause' and 'Coming to the Breath'.

3.4.1.3. Session summaries

Session content was summarised (Appendix 2, page 189) and emailed to participants following conclusion of a session along with a home practice calendar (Appendix 3, page 192) and additional resources for optional interest. This was a helpful reminder

to those who had participated in the session and provided information to update those who missed a session. This helped to provide content consistency across the groups.

3.4.1.4. Daily Home practice

Daily home practice included recommended formal and informal practices. Daily practice has been shown to be beneficial in reinforcing the content of each session's theme and practices (Carmody & Baer, 2007). Formal practices were accessed via an emailed link to free practices on Penguin Random House website. The link was included in the session summaries emailed to participants after completion of a session irrespective of whether they had been present or not.

Participants were asked to practice these 5 out of 6 days and record this on a calendar (Appendix 3, page 192). This calendar was a useful record for personal reflection regarding mindfulness practice flux and change in session 6. It could also be referred to by participants when answering the feedback form.

A journal space was included in the weekly calendar for participants to record their experiences as well as any questions they may have for the following session. This was an optional exercise and was not submitted.

3.4.1.5. Attendance

To encourage regular attendance, a weekly email with the zoom link or WhatsApp message was sent a day or two before a session as a reminder.

3.4.2. Programme 2

3.4.2.1. Structure

The first of the sixty-minute online sessions focused on creating an awareness of personal stress. Thereafter, each session focused on providing information about an emotion and participants were encouraged to relate this information to their personal stressful experiences and the management thereof. The emotions which were explored included: anxiety, anger, sadness and happiness (Appendix 4, page 194).

3.4.2.2. Tools

Later in a session, some simple, effective tools were shared which could be used to reduce the stress arising in relation to the session's emotion. These tools included: progressive muscle relaxation to manage anxiety, expressive journaling to manage sadness and determining goals and values to increase happiness.

3.4.2.3. Session summaries

As for programme 1, a summary email of the session's content (see Appendix 5, page 195) was received by participants as a reminder of each session's content and to assist those who had not been present for the online session. The summaries were noted as useful reminders for future referral.

3.4.2.4. Home practice

Participants were asked to practice these tools in relation to what was happening in their lives during the following week. Resources like supportive TED talks or literature were included. No calendar was supplied.

3.4.2.5. Attendance

A weekly email or WhatsApp was sent to group members as a reminder of each upcoming session.

A register of attendance was maintained by the Researcher.

3.4.2.6. Absence from class for both groups

If participants missed a class without prior notification, they were contacted by the Researcher on WhatsApp to see if a negative experience had occurred due to the programme and to offer additional support. Absence from a session was usually as a result of having been delayed at a clinical placement site.

3.5. Research Procedure

A proposal for the study was submitted to HREC2 in May 2019. Amendments to the proposal were addressed following which permission for the study to proceed was granted in August 2019 (see Appendix 6, page 197). Thereafter, permission was received from the University as well as the MBChB Committee to work with MBChB students from Years 3-5 (inclusive). Insurance coverage for the study was applied for and received from the University's Insurance Agents. Programme facilitation was initially planned to be conducted in contact sessions.

3.5.1. Facilitation of Face-2-Face Cycles 1 and 2 and impact of COVID-19

The process of face-to-face programme facilitation was started in January 2020 however, a second cycle's programme was halted when all contact sessions were suspended due to Minister of Higher Education, Science and Technology, Blade Nzimande's announcement (2020a) on 17th March of the closure of all South African universities and colleges from 18th March to 15 April dependent on the COVID-19 containment measures. However, with continued South African level 5 and 4 lockdown restrictions in response to the continued pandemic, (and with the exception of final year medical students permitted to return to continue clinical work) education institutions remained closed to support efforts to control the spread of the virus. With the transition to online learning, negotiations were successful in providing students with data and connectivity to support remote learning (Nzimande, 2020b).

At the time of the closures, there was little research regarding online facilitated mindfulness-based interventions (MBI's). Some studies' results indicated the potential to improve mental health outcomes, particularly stress (Spijkerman et al., 2016, Moore et al., 2020) as well as the perception of online facilitated MBI's as accessible, feasible and effective (Krusche et al., 2017; Spardaro & Hunker, 2016; Cavanagh et al., 2013).

3.5.2. Amendment to Proposal to accommodate online facilitation

With the transition to online learning and continued uncertainty related to the course of the virus and the country's endeavours to flatten the infection curve, HREC 2 ethical

clearance was applied and received for changes to the original proposal (see Appendix 6, page 199).

These changes were:

- study site to be online, using zoom
- an additional 30 minutes to accommodate any technical issues which may arise during online programme facilitation.
- an extension of this study for a further year due to the Co-vid 19 restrictions.
- Inclusion of Year 2 and Year 6 medical students.

These amendments were requested because of the difficulties in recruiting students during their practical modules. For the third-, fourth- and fifth- Year students, it was anticipated that their return to campus following lockdown would see them completing their practicums and it was anticipated that some of those who had agreed to participate during their theory blocks, would withdraw as a result. It was expected that others would be hesitant to participate because of the situation's uncertainty and a desire to complete their practicum without any additional responsibilities. In addition, there had been requests received from some interested Year 2 and Year 6 MBChB students during December 2019 and February 2020 recruitment to participate in the Mindful Student Study.

3.5.3. Facilitation of Online Cycle 1

HREC2, University and MBChB Committee permissions were received in July 2020. Recruitment began shortly thereafter. Bulk emails including the flyer (see Appendix 7, page 200) were sent to the respective MBChB Years and followed up with placement of the flyer on their MBChB WhatsApp groups. Several thirty-minute online information sessions were held to provide information about the study to interested students. (Students were invited via bulk email and WhatsApp message).

Interested students received the 'Deelnemeringligtingsvorm en Toestemmings Vorm' (Appendix 8, page 202) and 'Participant Information Sheet and Consent Letter' (Appendix 9, page 207). Included in this letter was information regarding the study's purpose and its expectations of participants, as well as potential risks and discomfort. The information sheet included a description of possible benefits to participants and/or

society, protection of participant information, confidentiality and participant right to withdraw at any time without prejudice. Participant's signature of the 'Declaration of Participant' was included at the end of the letter.

Following receipt of a participant's consent letter, an emailed link to the CORE-OM pre-course assessment was sent to them. Twenty-six CORE-OM pre-course assessments were submitted online. Following submission of this online form, all were contacted for an individual 40- 60- minute feedback session conducted on WhatsApp video or online with Zoom. During this session it was possible to discuss the results of the pre-course assessment and to answer any questions related to the study. Personal concerns were shared at this time related to time constraints and work responsibility. This interactive session played an important role in connecting the facilitator with participants as from this point, generally, any other contact with participants was as a group member during each session.

Online Cycle 1 was facilitated from 8 August – 17 September 2020.

Those who had submitted a pre-course assessment which excluded them from the study, were encouraged to seek assistance from Campus Health (whose contact details were included on the Participant information sheet) or their General or Mental Health Practitioner. Although the CORE-OM does not provide a diagnosis (and neither was the Researcher as a Registered Counsellor and Mindfulness Facilitator permitted to make a diagnosis), the result can indicate that the participant may be at risk and hence encouraged to seek the assistance of a mental health provider. Of the twenty-six who completed the CORE-OM for Cycle 3, three participants self-withdrew.

Eligible participants were randomly allocated 2:1 in favour of Programme 1. (As mentioned previously, this unequal distribution had been chosen to assess the feasibility of a shortened programme (from 90 minutes to 60) to accommodate student time constraints. It was also chosen to provide more students with an opportunity to experience a mindfulness-based intervention since the practice of mindfulness for stress-relief is not established at the University).

Randomisation was conducted by an independent person utilising computer-generated random numbers (commentpicker.com/teamgenerator.php.) The researcher was blind to this process of random allocation. The independent person was blind to the participants. Participants were notified by email by the Researcher to

which group they had been allocated. This email included information regarding resources (a notebook, paper and a raisin/piece of fruit) for the first session and an attached information sheet (Appendix 10, page 212) regarding online programme etiquette was included.

Prior to the first session, all participants completed the online pre-course measures (WEMWBS, PSS and SCS-sf). Following programme completion at six weeks, participants were requested to complete an emailed feedback form which was returned to the R/F for de-identification before being forwarded to the independent qualitative analyst.

In addition, at programme conclusion, participants received an email with links to the previously completed online assessment measures. Participants were reminded of form submission via email and/or WhatsApp. Eight weeks later, the process was repeated for the online measures and once all forms had been received, these were de-identified by the Researcher before being forwarded on to the Bio-statistician for quantitative analysis.

To assess participant mid-programme wellbeing, each participant completed an online wellbeing assessment (WEMWBS) from an emailed link. Those whose scores had declined between 3-8 points mid-programme were contacted via WhatsApp/Zoom to participate in a 30-45- minute individual session to establish the reason for the decline and if necessary, to encourage the participant to contact their mental health provider or Campus Health. The consequences of an introductory mindfulness courses are not reported as being harmful to participants who meet the selection criteria (Galante et al., 2016), nevertheless, it was important to monitor for such and to respond accordingly. Three participants' scores had declined mid-programme. When contacted, the reason for this decline was not ascribed to the programme but to a return to clinical work. Participants chose to remain in the study as they described its support as beneficial.

3.5.4. Facilitation of Online Cycle 2

Due to insufficient participants to complete recommended sample size (32), recruitment for online Cycle 2 took place from September 2, 2020.

Online Cycle 2 was facilitated from 19 September – 28 October 2020.

In online Cycle 2, three participants' results decreased by more than 3-8 points when assessed mid-programme with the WEMWBS. When contacted, reasons included loss of a pet, unanticipated surgery as well as relationship issues which had affected scores. All were able to continue with participation in the programme to its conclusion.

3.6. Research Instruments

Qualitative and Quantitative methods were used in this mixed methods study to expand knowledge and provide an understanding of the process, content, impact and to substantiate results using different types of data. The purpose of this is to 'broaden and triangulate research findings in a way that sheds more light on these findings' (Schifferdeck & Reed, 2009). Sears, Kraus, Carlough, & Treat (2011) conducted research into the perceived benefits and doubts of participants in a mindfulness meditation study. It was noted that the types of benefits which students reported (cognitive, emotional and spiritual) were not covered by existing quantitative measures which concentrate on awareness and attention. A recommendation was made for additional measures and multiple methods to portray the mindfulness experience.

Since this is a feasibility study, a mixed-methods approach can also uncover inconsistencies and if necessary, recommend new approaches in the main study.

3.6.1. Quantitative Approach:

Quantitative data collation relies on measurement and the use of different scales to compare and analyse different variables (Bless et al., 2006).

Participants were assessed online before and after the six-week intervention as well as eight weeks later. Four assessment measures were used to obtain quantitative data. These included:

- The Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM) (Core System Group, 1998) (Appendix 11, page 214)

- The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Stewart-Brown & Janmohamed, 2008) (Appendix 12, page 216)
- The Perceived Stress Scale (PSS) (Cohen, Kamarack, & Mermelstein, 1983) (Appendix 13, page 217)
- The Self-compassion Scale- short form (SCS-sf) (Raes, Pommier, Neff, & Gucht, 2011) (Appendix 14, page 219)

The Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM) (Core System Group, 1998) was used as a pre-course eligibility assessment as well as a post and 8-week follow-up intervention measure. The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Stewart-Brown & Janmohamed, 2008) was used pre-, post- and 8-week follow-up as well as during the programme as a wellbeing measure. Both the CORE-OM and WEMWBS measure the construct of subjective wellbeing, the former with 8 statements within the domain of subjective wellbeing and life functioning, the latter with 14. The CORE-OM's positively framed items are reverse scored. Participants completed a feedback form at the conclusion of week 6's session (Appendix 15, page 220).

3.6.1.1. Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM)

The CORE-OM (Appendix 11, page 214) is a 34-item scale which covers four domains: subjective wellbeing (4 items), problems/symptoms (12 items), life functioning (12 items) and risk (to self and others; 6 items) with higher scores indicative of more distress. The measure is suitable as a screening tool and outcome measure and its development was guided by practitioner feedback regarding what they believed was important to include in a clinical outcome measure (Barkham, Mellor-Clark, Connell & Cahill, 2006). It includes both positive characteristics and symptoms of mental ill-health (Barkham et al., 2006).

The period of assessment to be considered is 'over the last week'. Instruction includes to 'read each statement and think how often you felt that way last week. Then tick the box closest to this' (CORE-OM, p.1).

Within the domains described, there are a number of specific item clusters. Depression (four items), anxiety (four items), physical problems (two items) and trauma (two items)

are within the problems/symptom domain. The functioning domain includes the specific clusters of close relationships (four items), general functioning (four items) and social relationships (four items). Risk to self (four items) and risk to others (two items) are included in the domain of risk (Evans et al., 2002, p.51).

The domain of subjective wellbeing includes two positively worded statements: 'I have felt ok about myself' and 'I have felt optimistic about my future' as well as two negatively worded statements: 'I have felt like crying' and 'I have felt overwhelmed by my problems'. In the functioning domain, there are two positively worded statements in the close relationships cluster: 'I have felt I have someone to turn to for support when needed' and 'I have felt warmth and affection for someone'. There are also four positively worded statements in the general functioning cluster: 'I have felt able to cope when things go wrong', 'I have felt happy with the things I have done', 'I have been able to do most things I needed to' and 'I have achieved the things I wanted to'. Social functioning statements are negatively worded. Examples are: 'I have been irritable when with other people' and 'I have felt criticised by other people' (Evans et al., 2002).

The CORE-OM was developed as a standardised brief outcome measure and screening tool designed to assess efficacy and effectiveness of multiple disciplines which offer a variety of psychological treatments. Although it is not designed to gain a diagnosis of a specific disorder, it is sufficiently comprehensive to highlight areas of concern and risk as a pre-course assessment as well as sensitivity to change as an outcome measure at post- and post-post-test.

A mean score is assessed for the total and individual domain scores. Recently, these scores are being multiplied by 10 to assess whether there are significant changes between scores as whole numbers. The range of scores is 0-40 (Barkham et al., 2006). Cut-off points were originally 11.9 for males, and 12.9 for females (Evans et al., 2002) but more recently, a cut-off score of 10 between clinical and general population samples is used (Connell et al., 2007).

Internal consistency is high (Cronbach's alpha coefficient for all domains >0.75 and <0.95) and test-retest reliability for all domains except risk is good (0.87-0.91, risk = 0.64) (Evans et al., 2002). The scale has convergent validity with seven other instruments. There are large differences between clinical and non-clinical samples. It

also has a 'good sensitivity to change' (Evans et al., 2002, p.51). User-friendly, the measure is short, easily scored and freely available (Young, 2009).

CORE-OM intake data collected at a South African university (Rhodes) counselling service was compared with data from 11 UK university counselling centres (Young, 2009). Norms for the different groups were similar and there were no statistical differences in the total or domain scores. The scale was used in the Cambridge University Mindfulness Student Study (Galante et al., 2018).

3.6.1.2. Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

The WEMWBS is a 14-item questionnaire, which has been validated for the broad measurement of subjective wellbeing, psychological functioning and good relationships with others (Stewart-Brown & Janmohamed, 2008), with individuals aged 13-74 in the UK (Putz et al., 2012). (Appendix 12, page 216). Areas not covered include spirituality or purpose in life (Stewart-Brown & Janmohamed, 2008).

It was designed as a monitoring mental well-being tool at population level which participants self-complete. The positively worded statements with five response categories include well-being and mental health related statements like 'I've been feeling optimistic about the future', I've been feeling useful' and 'I've been feeling good about myself'. Statements related to good relationships are: 'I've been feeling close to other people', 'I've been feeling loved' and 'I've been feeling interested in other people'. The period of assessment to be considered when answering the statements is the previous two weeks (Putz et al., 2012).

The instructions on the assessment state: 'Below are some statements about thoughts and feelings. Please tick the box that best describes your experience of each over the last 2 weeks' (WEMWBS, 2006).

The scale shows high levels of internal consistency (Cronbach's alpha co-efficient = 0.89) (Stewart-Brown & Janmohamed, 2008) and test-retest reliability at one week is high (0.83) (Tennant et al., 2007) and was highly correlated with other mental health and wellbeing scales like the Scale of Psychological Wellbeing, Satisfaction with Life Scale and WHO-5 wellbeing Index. This latter correlation shows that WEMWBS includes both subjective experiences of happiness as well as positive psychological

functioning, good relationships and self-realisation perspectives of wellbeing ((Stewart-Brown & Janmohamed, 2008).

The scale was used in a South African study with medical students (Tin Maung Maung, 2017) as well as in the Cambridge University Mindfulness Student Study (Galante et al., 2018).

The scale is a useful monitoring tool of participant wellbeing throughout the programme as an increase of 3-8 points on the WEMWBS over the course of the programme is regarded as an indication of mental well-being improvement. A decrease of 3-8 points is regarded as an indication of mental well-being decline.

In this study, as previously stated, if such was noted, it was important that it was addressed with the participant whereby contact was made with the participant for an individual session to discuss the decreased score. If necessary, the participant was encouraged to contact their mental health care practitioner or Campus Health Student Counselling Services.

Participants were asked to complete the WEMWBS mid-programme to assess well-being as a pre-cautionary measure. As mentioned previously, introductory mindfulness courses are not usually associated with harmful experiences by those have met selection criteria (Galante et al., 2016) but ethically, it is important to monitor participants' wellbeing and respond accordingly.

The primary outcome of the two instruments would be a self-reported measure of psychological distress utilising the WEMWBS and CORE-OM measures.

Participants completed two additional measures:

The Perceived Stress Scale (PSS) (Cohen et al., 1983) (Appendix 13, page 217) and the Self-Compassion Scale-short form (SCS-sf) (Raes et al., 2011) (Appendix 14, page 219).

3.6.1.3. Perceived Stress Scale (PSS):

The PSS (Cohen et al.,1983) (Appendix 13, page 217) measures the perception of stress with questions about feelings and thoughts regarding the extent that life's circumstances are evaluated as stressful. Items are designed to measure how

'unpredictable, uncontrollable and overloaded respondents find their lives' (Cohen et al.,1983, p. 4) including current levels of experienced stress. The degree to which life is experienced as unpredictable, uncontrollable and overloading have been identified in research as the main components of stressful life experiences (Cohen et al., 1983).

Examples of the questions include: 'In the last month, how often have you been able to control the way you spend your time?', 'In the last month, how often have you found that you could not cope with all the things you had to do?' and 'In the last month, how often have you felt nervous and "stressed"'? (Cohen et al., 1983, p.394).

Respondents rate items on a 5-point Likert Scale which ranges from '0' (Never) to '4' (Very often). Scores are calculated by reversing four positively stated items and then adding all items together to obtain a total score. Higher scores indicate greater perceived stress.

The scale has adequate internal and test-retest reliability. Coefficient alpha reliability was reported as .84, .85 and .86 for the three samples (Cohen et al., 1983). The PSS reports a similar result to a life impact score than to a score resulting from a number of events experienced within a time span. The former is based on a perception of an experience, which is by its nature, subjective, while the latter, life event scale result is more objective (Cohen et al., 1983). The scale is not intended to measure psychological symptoms.

This scale which is designed to measure how stressful life's experiences are perceived to be (Gonzalez-Ramirez, Rodriguez-Ayan, & Hernandez, 2012) as the relationship between students' lives, experiences and relationships, and their perceived stress levels is addressed by the mindfulness intervention's programme content with a focus on changing this relationship to distressing thoughts, feelings and body sensations to reduce perceived stress.

3.6.1.4. Self-Compassion Scale- short form (SCS-sf):

Neff's has proposed a definition of self-compassion which includes the components of self-kindness, common humanity and mindfulness (Neff, 2003b). The SCS-sf (Appendix 14, page 219) has statements reflecting self-kindness include: 'I try to be understanding and patient towards those aspects of my personality I don't like' and

‘When I’m going through a hard time, I give myself the caring and tenderness I need’. Statements pertaining to common humanity are ‘I try to see my failings as part of the human condition’ and ‘When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people’. Mindfulness is reflected in the following statements: ‘When something painful happens I try to take a balanced view of the situation’ and ‘When something upsets me, I try to keep my emotions in balance’ (Raes et al., 2011, p. 251).

In this scale, respondents are asked to rate items on a 5- point Likert scale ranging from ‘1’ – ‘5’. Negative subscale items reflecting self-judgment, isolation, and over-identification are reverse- scored before computing a mean total score (Raes et al., 2011).

The SCS-sf demonstrated adequate internal consistency (Cronbach’s alpha was reported at 0.86) and a near perfect correlation with the longer SCS (0.97 in all samples). It was found to represent a reliable and valid alternative to the long-form SCS, and in particular when looking at overall self-compassion scores. The use of the SCS-sf is helpful in time constrained settings (Raes et al., 2011) but it is recommended that the long-form SCS be used if subscale scores are required in research as they are less reliable in the short form (Neff, 2011 in Raes et al., 2011).

In order to compare participants’ SCS-sf scores with Raes et al., (2011) normative data, the SCS-sf (Total) score was recalculated using summative scores.

The Mindfulness intervention includes an emphasis on being kind and non-judging towards the self in the face of what is arising from the beginning of the programme. In session 5, a befriending practice is introduced with the offering of phrases of ‘loving-kindness’ towards the self and others. Self-compassion is associated with psychological well-being and may encourage resilience (Neff, 2009, in Raes et al., 2011). Therefore, it was appropriate to use the SCS-sf to determine whether participants report increased self-compassion as an important protective factor to promote resilience.

3.6.2. Qualitative Approach:

Qualifying words and descriptions are used to record perspectives of participants' experiences to gather information for qualitative research. According to Bless et al. (2006, p. 44), 'language provides a far more sensitive and meaningful way of recording human experience'.

Thematic analysis involves the identification and analysis of patterns of meaning within data in relation to the research question. Codes refer to the most basic element of the raw data from which the units of analysis (themes) are developed (Braun & Clarke, 2006) and have in common central idea. Codes are used to identify qualities of the data which may be significant in relation to the research question. Themes provide a structure for ordering, summarising and presenting an analysis. The benefit of thematic analysis is its flexibility in relation to the research question, size and make-up of sample, method for collecting data and the ways in which it generates meaning (Braun & Clarke, 2016).

In order to assess amongst others, participants' reasons for course participation, regularity of home practice and rating of the course, participants were asked to complete a feedback form (Appendix 15, page 220). This information provided the data for qualitative data analysis by an independent analyst.

3.7. Collation of data

3.7.1. Quantitative data

The pre-assessment measures (on Microsoft Forms.office.com) were accessed online from emailed links received by interested participants as were the pre-, post-, and post-post measures. An email containing a link to each of these emails was sent to eligible participants before the first session, at the conclusion of the sixth session and eight weeks later. The primary researcher alone had access to submitted information, which was password protected, as was the computer used to access the information.

Demographic information was obtained from submitted forms. This included age, gender and MBChB Year of Study.

Participants' responses were given a de-identified number to protect their anonymity by the Researcher. This individual de-identified number was used throughout the programme's data collection Excel spreadsheets as well as the feedback forms. Furthermore, participants' responses were not separated by group in order to further de-identify information. De-identified Excel spreadsheets were forwarded on to a Stellenbosch University Biostatistician who captured the data and provided assistance regarding analysis.

A repeated measures ANOVA with a two time-point analysis (i.e. baseline and post-course) as well as three time-point analysis (i.e. baseline, post-course and 8-week follow up) were conducted using SPSS. Two hypotheses were tested in each analysis, the main effect of time, in order to assess whether participants' CORE-OM, WEMWBS, PSS and SCS-sf scores changed over time, and the interaction effect of time and treatment group to assess whether there was any difference between the two groups in terms of rate of change over time for each outcome. A statistically significant interaction effect was taken to indicate an effect of the interaction. If the interaction effect was not statistically significant, the main effect of time was interpreted for both treatment groups. A multivariate test, for the effects of time and time x treatment group was used, with the Wilks' Lambda reported as the test statistic. A p value <0.05 indicated statistical significance.

Since the scores in the CORE-OM domain of risk were not normally distributed, an Independent-Samples, Mann-Whitney U Test was used to compare change in risk scores over either two- or three- time points, between the two groups. Friedman's test was used to test the time effect overall, regardless of group.

In order to compare the study's results with those from other studies, EpiCalc 2000 ® (Version 1.02. Joe Gilman & Mark Myatt, 1998, Brixton Books) was used since only the aggregated data was available from comparison studies.

3.7.2. Qualitative data

The feedback form (Appendix 15, page 220) was emailed to participants on completion of session 6. The completed forms were returned to the researcher who provided each form with the participant's corresponding de-identified number. De-identified forms

were forwarded to an independent analyst who determined codes and themes from the data. Denzin (1978 in Carter, Bryant-Lukosius, Di Censo, Blythe, & Neville, 2014) describes investigator triangulation as the participation of two or more researchers in the same study to provide multiple observations and conclusions. This can both confirm findings and provide different perspectives in which phenomenon is expanded and/or theories are modified (Barbour,1998 in Golafshani, 2003). However, if convergence, inconsistency or contradiction is the result of triangulation, then as researchers, 'we attempt to make sense of what we find' (Mathison,1988).

Triangulation in qualitative research may also include the combined use of various methods and data to strengthen a study as recommended by Paton (2001, p. 247 in Golafshani, 2003) and to record the construction of reality as appropriate (Johnson, 1997 in Golafshani, 2003). This may mean including both quantitative and qualitative approaches, as this study did.

For Creswell and Miller (2000, in Golafshani, 2003, p. 126) triangulation is defined as a 'validity procedure where researchers search for convergence among multiple and different sources of information to form themes/ categories in a study.'

Since the researcher was also the facilitator of the two programmes, analysing the feedback forms for codes and themes would have resulted in a lack of credibility in the study. Thus, thematic analysis was conducted by an independent thematic analyst. This information was provided to the primary investigator on completion of this process and used in conjunction with the quantitative results to expand the depth of the study.

3.8. Ethical Consideration

Ethical approval was sought and received from Stellenbosch University's Health and Research Ethics Committee (HREC2) (Appendix 6, page 197).

3.8.1. Adherence to Ethical Guidelines

The ethical principles of the Helsinki Declaration (2013) as well as the Department of Health's (2015) Ethics in Health Research guidelines were adhered to. This included

an understanding of the duty of the researcher to promote and safeguard participants' health, well-being and rights to self-determination.

3.8.2. Permissions

Permission was requested and received from the MBChB Committee as well as the Institution, in order to work with MBChB students.

Permission was requested and received for the study to be covered by Stellenbosch University's Insurance for the duration of the study.

3.8.3. Informed Consent

Participants are entitled to be given information about the study's content, possible effects as well as risks and potential benefits for them. They are entitled to withdraw from the study at any time without consequence and require notification to this effect. Thus, participants were emailed a 'Deelnmeringligtingsbald en Toestemmings Vorm' and 'Participant Information and Consent form' (Appendix 8 and 9, pages 202, 207 respectively) when they contacted the researcher for the first time about the study following receipt of the bulk Year email and flyer (Appendix 7, page 200).

An offer to attend an online half-hour information session was included with the flyer to answer any questions participants might have before agreeing to participate in the study by returning the signed participant information and consent form.

Written consent to participate in the study was received before the pre-course assessment was submitted online. This indicated that participants understood what was included in the information sheet.

3.8.4. Appropriate referral

Following the pre-course assessment, participants whose forms showed signs of distress were engaged with during the feedback session and were encouraged to contact their mental health provider or contact Campus Health. The Participant Information Sheet included Campus Health and 24-Hour Crisis Number's contact

details as well as those of South African Depression and Anxiety Group (SADAG) and Lifeline.

Although the mindfulness programme which is being offered as the intervention is an adaptation from MBCT, it is designed for non-clinical populations. This type of mindfulness programme is not reported as being associated with adverse experiences for those who meet the selection criteria (Galante et al., 2016). Even though the practices are shorter, it does involve sitting for short periods of time and observing internal experience which may exacerbate symptoms.

Individuals who are excluded from the study because they were currently experiencing symptoms associated with mental ill health but wished to experience a mindfulness programme, were advised to participate in a MBCT programme instead once their condition had stabilised.

Participants completed the WEMWBS mid-course in order to determine an increase or decrease in mental well-being or distress. A total of six participants whose scores indicated a decrease of 3-8 points were considered to be experiencing a mental decline and were contacted to establish whether the decrease was as a result of participation in the programme. Contact was also made to offer additional support and if necessary, to encourage the participant to consult their medical practitioner or Tygerberg Campus Health. Reasons for wellbeing score decline was not related to programme participation. Participants thus contacted, chose to remain in the study.

3.8.5. Absenteeism

Absent students were contacted by WhatsApp to ascertain whether a negative experience related to the programme had taken place. Whether this had been the case or not, additional support was offered. As in the above scenario, there is a duty to act if a participant is in distress or at risk and the same procedure (above) would have been followed.

3.8.6. Serious Adverse Events

Serious adverse events which might have occurred in the course of the investigation would have been reported to the HREC timeously.

3.8.7. Confidentiality

The groups to which participants were allocated were closed groups. These programmes were not therapy but due to their nature, therapeutic. This entailed the sharing of participants' experiences hence confidentiality was emphasised. Although none was forced to disclose, being small, closed groups, participants shared freely, and this enhanced group learning.

The researcher had access to participant information which was submitted online via password protected 'Forms.office.com'.

Participants were de-identified through the assignment of a number. This number was used on all Excel or Feedback forms which were shared with analysts.

The computer on which information was stored, is password protected.

3.8.8. Anonymity

Participants' results were de-identified before being submitted for randomisation and for quantitative and qualitative analysis by independent people.

In the event of the results of the study being published, all participant particulars will be kept confidential and remain anonymous.

Data pertaining to the study will be destroyed after a five-year period.

3.8.9. Informed Consent

This information as well as that sharing the purpose of the study, its activities and participants' commitments was described in the 'Deelnemeringligtingsblad en Toestemmings Vorm' and 'Participants' Information Sheet and Consent Form'

(Appendix 8 & 9, pages 202, 207). Also included were support services and their contact details, including Campus Health, Lifeline and SADAG.

Thirty-minute online information sessions were held during the recruitment period to answer questions for some who had additional queries about the programme.

3.8.10. Inducement to Participate

There was no inducement for participation in the study.

3.8.11. Discontinuance

Participants were informed of their right to withdraw from the study at any time and without prejudice.

3.8.12. Reporting back to Participants, MBChB Committee and the Ithemba Foundation

Once the study is complete, the results of the study will be made available to participants as well as to the MBChB Committee and the Ithemba Foundation.

3.9. Conclusion

The prevalence of mental health issues for medical students is indicated in the literature. The serious consequences for student well-being and their lives as medical health professionals and the clients with whom they practice, is noted. Training in the practice of mindfulness to manage cognitive reactivity and enhance well-being has been shown to be effective for students in other parts of the world (Galante et al., 2018; Carsley, Khoury, & Heath, 2017; Beshai et al., 2015; Dobkin & Hutchinson, 2013; Shapiro et al., 2005; Shapiro et al., 1998).

Due to COVID-19 restrictions, it was fitting to conduct an online study which would be able to contribute in both these areas as well as to potentially, inform student well-being within a broader student mental health and well-being programme for other South African tertiary environments. A randomised controlled pilot study was an

acceptable starting point to investigate the feasibility of a main study in this environment.

The quantitative and qualitative results of the study will be provided in chapter 4 with discussion thereof in chapter 5.

CHAPTER 4: RESULTS

4.1. Introduction

The primary aim of this study was to investigate the benefit of a six-week mindfulness-based intervention for medical students to optimise wellbeing, increase self-compassion and resilience to stress when compared with supportive counselling.

The hypothesis was that the mindfulness group would show reduced psychological distress and increased self-compassion during the semester in which they participated in the programme in comparison to the supportive counselling group.

If the intervention group noted reduced distress and increased wellbeing and self-compassion at programme conclusion and at 8- week follow-up (8-WFU), the intervention would be regarded as an indicator of resilience to stress.

4.2. Participants

The target population group of this study was undergraduate second-, third-, fourth-, fifth- and sixth year MBChB students who were enrolled at the University of Stellenbosch Faculty of Medicine and Health, Tygerberg Campus in 2020. They were invited to participate in a 'Mindfulness for Medical Students' Pilot Stress Reduction Programme'.

With reference to Flow Diagram: Study Profile (page 90), a convenience sample of participants was obtained by emailing all students within the population group via the University's bulk email system and those who responded were sent an information sheet and consent of letter. Once a signed letter of consent was received by email to allow access by the researcher to personal information, participants were emailed links to the online pre-course CORE-OM assessment.

Inclusion criteria included:

- 2020 MBChB Year 2-6 registered, full-time students at Tygerberg Campus, eighteen years and over,
- with no severe or moderate mental illness or crisis (self-reported questionnaire) which would affect their ability to participate in the programme.

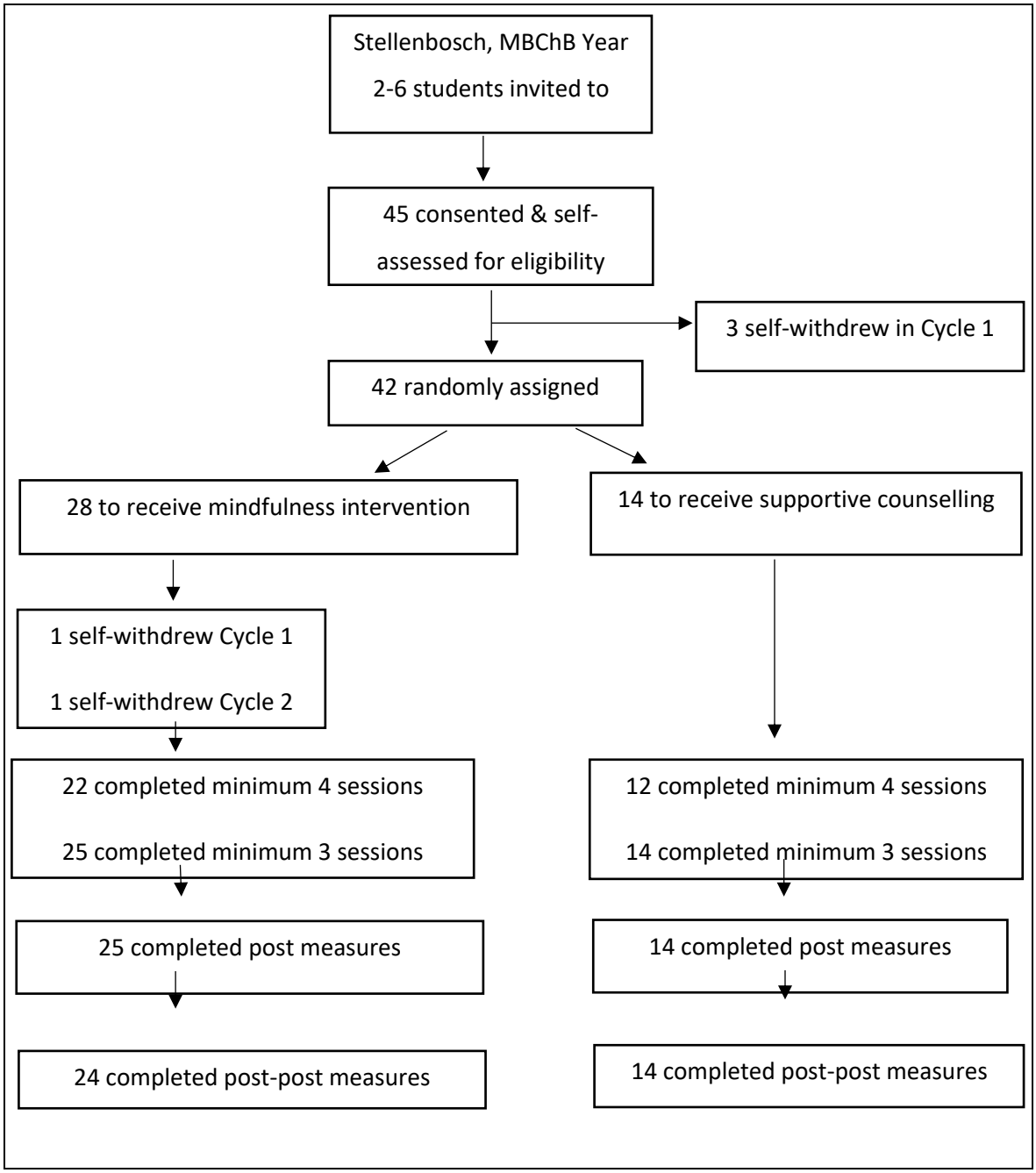
- willingness to be randomly allocated to one of two groups,
- realistically able to attend 5 of 6, 60 minute-online sessions.
- willing to complete 10-15 minutes of home practice 5/7 days of the week.
- Since this was an online programme with online measures for data collection, access to a laptop was necessary.

Exclusion criteria included:

- If currently experiencing severe periods of anxiety or depression
- Any serious mental or physical health issue which could impact their participation in the study.

The study began with recruitment in July 2020 and ended in December 2020 when the final online measures were completed.

Two cycles of recruitment took place – one in July 2020 and a second in August 2020. Although this was a feasibility study, the aim was to include a sample size of 32 (as recommended by Torgerson & Torgerson, 2008). This was not achieved during Cycle 1 and so a second recruitment of participants for an additional cycle was conducted successfully.



Flow Diagram: Study Profile

There were 64 students who responded to the email and expressed an interest in participating. Forty-five participants completed the pre-course assessment and feedback interview, three were excluded due to mental ill-health issues and referred to mental health providers, one participant self-withdrew with physical ill-health and one participant self-withdrew after two sessions due to internet challenges. There were

38 participants who completed the six-week programme, submitted a feedback form and completed pre-post- and post-post measures.

Table 4. 1. Demographic Information

MBChB Year of Study-(n%)	Mindfulness Group	Supportive Counselling Group	Total
2	6 (25%)	2 (14.3%)	8 (21.1%)
3	3 (12.5%)	0 (0.0%)	3 (7.9%)
4	7 (29.2%	8 (57.1%)	15 (39.5%)
5	4 16.7%	3 (21.4%)	7 (18.4%)
6	4 (16.7%)	1 (7.1%)	5 (13.2%)
Total	24 (100%)	14 (100%)	38 (100%)
AGE – mean (SD)	23 (2)	22(2)	23 (2)
GENDER			
Female	18 (75%)	9 (64.3%)	27 (71.1%)
Male	6 (25%)	5 (35.7%)	11 (28.9%)
Total	24 (100%)	14 (100%)	38 (100%)

4.2.1. MBChB Year of Study:

With reference to Table 4.1, MBChB Year 4 students formed the largest percentage, 39.5% with 7 randomised to the mindfulness group and 8 to the supportive counselling group and a total of 15 students.

MBChB Year 2 students accounted for 21.1% of the study with 6 participants in the mindfulness group and 2 in the supportive counselling and a total of 8 students.

MBChB Year 5 students formed 18.4% of the sample with 4 in the mindfulness group and 3 in the supportive counselling group and a total of 7 students.

Of the total group percentage, MBChB Year 6 students accounted for 13.2% of participants. Four (16.7%) were randomised to the mindfulness group and 1(7.1%) to the supportive counselling group and totalled 5 in the study.

The least number of participants for the study were from MBChB Year 3 which accounted for 7.9% of the group total (3). Three participants were randomised to the mindfulness group (12.5%) and none to the supportive counselling group.

4.2.2. Age:

Participants' total mean age was 23, SD (2), with a mean of 23, SD (2) in the mindfulness group and 22, SD (2) in the supportive counselling group.

Age range of participants was 19-30 years old.

4.2.3. Gender:

Altogether, there were 38 participants who completed the programme of whom, 27 are female and 11 are male.

Participants were randomly assigned to two groups in a 2:1 ratio in favour of the Mindfulness intervention. There were 24 participants in the Mindfulness group and 14 in the Supportive Counselling group.

4.3 Quantitative Data Analysis

Participants' results were self-assessed and recorded online. Cycles 1 and 2 were analysed simultaneously using the statistical analysis programme, SPSS.

Four measures were used: CORE-OM, PSS, WEMWBS and SCS-sf.

Three different time points for each participant were collected for the CORE-OM, WEMWBS, PSS and SCS-sf instruments.

The first data collection point was before the start of the programme (pre-), the second at the conclusion of the six-week programme (post-) and the third, at eight weeks follow-up (8- WFU) for both cycles.

Results for time and time-treatment effects for all four measures are recorded in Table 4.2.(page 93).

The results for the CORE-OM (Total), WEMWBS and PSS measures indicate a significant time effect ($p<0.001$) at both post-course and 8-WFU analyses. However, there is no significant effect between the time-treatment effect which indicates that both groups benefitted from the programmes in which they participated. The SCS-sf

(Total) score reflected a significant time effect change for both groups (p= 0.004; p= 0.016) at course conclusion and 8 WFU.

Table 4. 2. Time- and Time-treatment Effect for CORE-OM, WEMWBS, PSS and SCS-sf

	TIME-TREATMENT EFFECT				TIME EFFECT			
	POST-COURSE ANALYSIS		*8-WEEK FOLLOW-UP*		*POST-COURSE ANALYSIS*		*8-WEEK FOLLOW-UP*	
	*STATISTIC^*	*P-VALUE*	*STATISTIC^*	*P-VALUE*	*STATISTIC^*	*P-VALUE*	*STATISTIC^*	*P-VALUE*
CORE-OM (TOTAL)	1.000	0.927	0.992	0.865	0.585	<0.001*	0.550	<0.001*
TOTAL-RISK	1.000	0.915	0.993	0. 883	0.606	<0.001*	0.577	<0.001*
Subscales								
WELLBEING	0.941	0.137	0.912	0.201	0.866	0.022*	0.859	0.070
PROBLEMS	0.993	0.624	0.995	0.910	0.460	<0.001*	0.448	<0.001*
FUNCTIONING	0.999	0.855	0.954	0.439	0.998	0.784	0.958	0.475
RISK	136.5^	0.263^	126.0^	0.212^	10.0^^	0.002^^*	11.0^^	<0.001^^*
WEMWBS	0.997	0.728	0.989	0.825	0.525	<0.001*	0.522	<0.001*
PSS	0.995	0.668	0.987	0.789	0.554	<0.001*	0.450	<0.001*
SCS-SF (TOTAL)	0.984	0.447	0.947	0.384	0.789	0.004*	0.789	<0.016*
Subscales								
SELF-KINDNESS	0.939	0.135	0.931	0.286	0.877	0.031*	0.561	<0.001*
SELF-JUDGMENT	0.925	0.097	0.925	0.257	0.896	0.049*	0.819	0.030*
COMMON HUMANITY	0.965	0.262	0.965	0.535	0.911	0.068	0.802	0.021*
ISOLATION	0.995	0.679	0.907	0.183	0.763	0.002*	0.693	0.002*
MINDFULNESS	0.893	0.045*	0.886	0.119	0.923	0.091	0.892	0.135
OVER-IDENTIFIED	0.964	0.252	0.963	0.517	0.601	<0.001*	0.518	<0.001*

Abbreviations: Clinical Outcomes in Routine Evaluation-Outcomes Measure (CORE-OM), Warwick Edinburgh Mental Wellbeing Scale (WEMWBS), Perceived Stress Scale (PSS), Self-Compassion Scale-short form (SCS-sf).

*Statistical significance for all tests was set as p< 0.05

^ Wilk's lambda test statistic is reported for all except Risk. For Risk, Mann-Whitney U test statistic is reported for change in scores between groups.

^^ Wilk's lamda test statistic is reported for all except Risk. For Risk, the Wilcoxon signed ranks test statistic is reported.

4.3.1. Clinical Outcomes in Routine Evaluation-Outcomes Measure (CORE-OM)

CORE-OM is an outcome measure which measures general distress. Higher scores indicate more distress. The item scores were reversed to obtain a total score.

CORE-OM Total score

With reference to Table 4.2 (page 93) regarding participants' CORE-OM (Total) score or the subscales, there was no significant effect noted in the time-treatment effect scores (which are representative of differences between the groups' change as a result of the intervention) at either time point (p=0.927; p=0.865 respectively).

However, there was a significant time effect change for both groups from baseline to post-course (p<0.001) as well as from post- to 8WFU (p<0.001).

The following results were also noted:

Subscale items

Total -Risk:

A significant time effect (p<0.001) was noted for total – risk at both time points for both groups. There was no significant treatment effect noted between the groups at post- (p= 0.137) or 8 WFU (p= 0.201).

Wellbeing:

Although there was no statistically significant effect noted between the two groups with regard to the subscale of wellbeing at either time points (p= 0.137; p= 0.201 respectively), a significant time effect was noted for wellbeing (p = 0.022) at post course analysis, but not at 8WFU.

Problems:

It was noted that there was no significant treatment effect between the groups' scores on the problems' subscale (p= *0.*624*; p*=0.910 respectively*)*. However, there was a significant time effect noted for problems (p< 0.001) at post-course and 8 WFU (p<0.001).

M and SD scores were almost halved in the MI group from baseline to post course from 16.00(6.73) to 8.66 (4.12) but increased slightly at 8 WFU to 9.02(4.28). The SC group's decrease in these areas was not as marked 17.85(6.75) to 11.54 (5.39) and 11.36 (7.77) at 8 WFU. (See Appendix 16, page 221). Although this difference between the groups might appear significant, it was not.

Functioning:

There was no statistically significant effect reported between the groups in the subscale of functioning at either time point (p= 0.855; p= 0.910 respectively) and there was no statistically significant time effect reported at either post- or 8 WFU (p=0.784; p= 0.475 respectively).

M and SD were consistent in the subscale of functioning from baseline to post- and 8 WFU.

Risk:

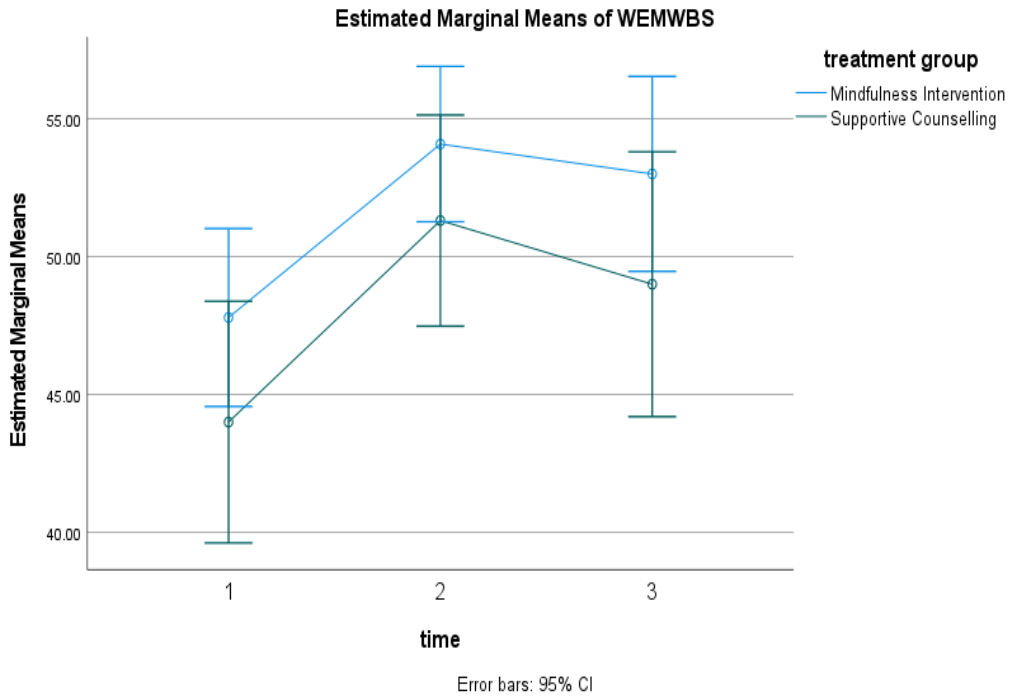
Risk was initially tested for change over time with the Mann Whitney test as the scores were not normally distributed and predominantly centred around 0. Thereafter, using a Friedman's test, a significant time effect was noted for risk (p=0.002; and p=0. 001). This is indicative of decreases in changes over time in risk, in both groups irrespective of treatment group.

4.3.2. Warwick Edinburgh Mental Wellbeing Scale (WEMWBS)

WEMWBS is a measure of the state of an individual's mental well-being. Higher scores (59-70) represent greater/ above average wellbeing and scores from 40-59, fall within the average range (Anderson, Catroppa, & Ponsford, date unknown). With reference to Appendix 16 (page 222), participants' total baseline (46.45, *SD*= 7.89), post- (53.10, *SD*= 6.83) and at 8 WFU (51.59, *SD*= 8.63) scores were within the average range.

With reference to Table 4.2 (page 93), it is noted that there was no statistically significant effect between the two treatment groups (p= 0.728; p=0.825) at post- and 8 WFU. However, there was a significant time effect ($p<0.001$) for wellbeing at post-course completion as well as 8 WFU for both groups.

Figure 4. 1. Estimated Marginal Means of WEMWBS indicates change over time for both groups.



Note: Time point 1 reflects baseline measurement, time point 2, is indicative of post- course time point measurement, and time point 3, 8- week follow up.

4.3.3. Perceived Stress Scale (PSS):

The PSS assesses change over time in individual's perceived stress. Higher scores reflect increased perceived stress.

With reference to Table 4.2 (page 93), PSS showed a significant decrease (p<0.001) at post-course (p=0.554) and at 8-WFU (p=0.450). This decrease was not dependent on treatment group (p= 0.788). Between post-course assessment and 8-WFU, both groups showed no further decrease in scores.

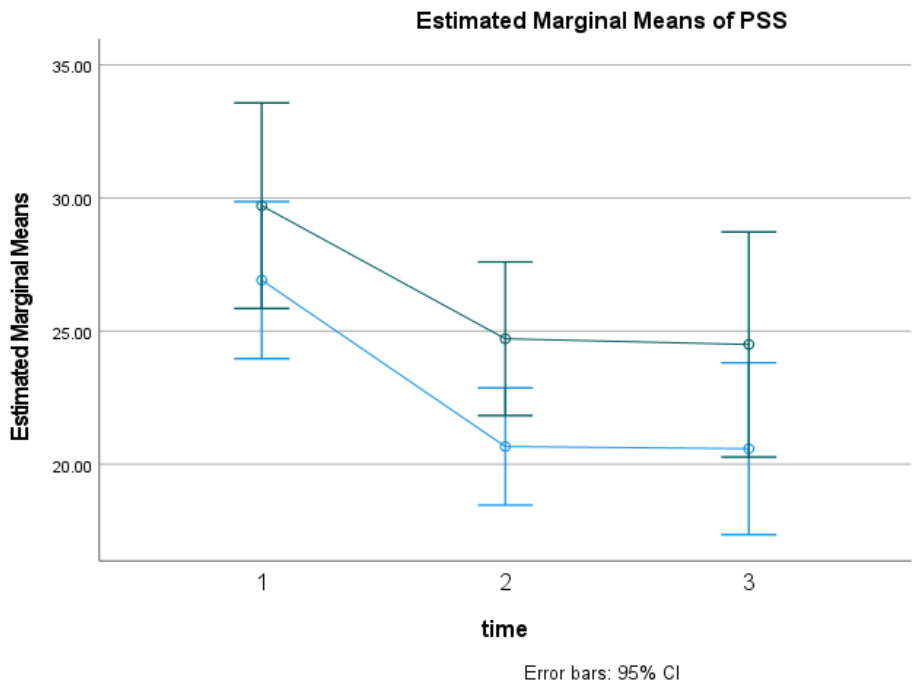
Assessed at baseline, participants' PSS Total mean score was 27.9 (*SD*= 7.1 which shifted over time to 22.1 (*SD*= 5.6) at post-course assessment and 22.0 (*SD*= 7.9) at

8-WFU (see Appendix 16, page 221), indicating decreased perceived stress in both groups.

The MI group decreased from 26.91 (*SD*= 7.54) baseline, to 20.66 (*SD*= 5.36) post- and 20.58 (*SD*= 6.97) at 8WFU. Similarly, the SC group decreased from 29.71(*SD*= 6.30) to 26.71(*SD*= 5.25) and 24.50 (*SD*= 9.07).

This decrease is evident in Figure 4.2.

Figure 4. 2. Estimated Marginal Means of PSS indicates change over time for both groups.



---- Mindfulness Group

---- Supportive Counselling Group

Note: Time point 1 reflects baseline measurement, time point 2, is indicative of post- course time point measurement, and time point 3, 8- week follow up.

4.3.4. Self-compassion Scale- short form (SCS-sf)

The SCS-sf (Raes et al., 2011) which is useful in time constrained settings measures, in times of challenge, one's propensity to be kind, caring and compassionate to oneself. The mean score across the 12-item scale is calculated for the short form measure with negative subscale items of self-judgment, isolation and over-identification reversed before calculating a total mean. Neff (2011, in Raes et al., 2011) recommends use of the longer SCS if subscale information is required as SCS-sf scales are less reliable.

SCF-sf (Total)

At post-course analysis, the SCS-sf (Total) score (Table 4.2 page 93) did not show any treatment x time effect at post- or 8 WFU respectively (p=0.447; p=384). However, there was a significant time effect (p= 0.004) from baseline to post-course analysis as well as for 8-WFU (p= 0.016). Unexpectedly, it was in the opposite direction - there was a decrease in SCF-sf (Total) scores.

Subscales

With regard to the SCS-sf subscales, it was noted that there was a significant time effect at both post- (p= 0.031) and 8-WFU (p<0.001) for the subscale of self-kindness, self-judgment (p= 0.049; p = 0.030 respectively), isolation (p= 0.002, p = 0.02*)* and over-identification (p=<0.001; p=<0.001). Common humanity reflected a statistically significant effect over time at 8 WFU only.

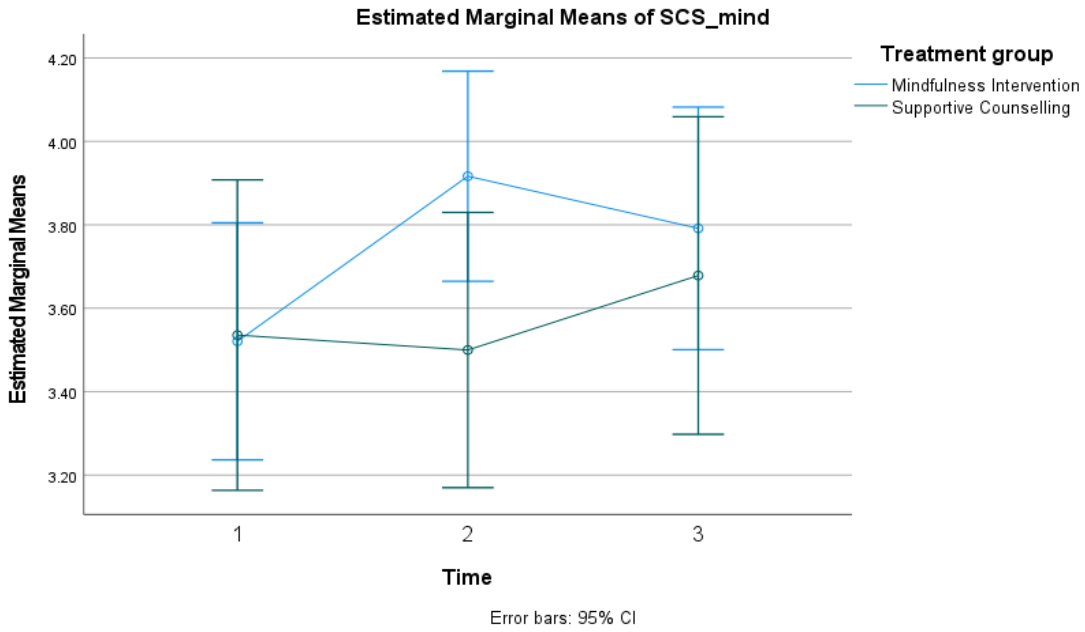
Mindfulness

The only time by treatment effect difference registered between the two groups which was significant at post-course assessment, was in the subscale: mindfulness (p= 0.045). However, this effect had reduced slightly by 8-WFU (p= 0.119).

This difference is visible in the mindfulness M and SD results for the two groups: MI pre- 3.52 (*SD* = 0.66); post- 3.91 (*SD* = 0.65) and 8WFU 3.79 (*SD* = 0.64) in comparison to SC pre- 3.53 (*SD* = 0.71); post- 3.50 (*SD* = 0.51) and 8WFU 3.67 (*SD* = 0.79).

See Figure 4.3 Estimated Marginal Means of SCS_Mind reflecting change between groups.

Figure 4. 3. Estimated Marginal Means of SCS-sf_ Mind reflecting change between groups.



Note: Time point 1 reflects baseline measurement, time point 2, is indicative of post- course time point measurement, and 3, 8- week follow up.

4.4. Qualitative Thematic Analysis

The aim of this aspect of the present research was to explore participants' perceptions of their experience of the six-week intervention. An additional aim was to assess participants' adherence to home practice as well as their rating of the programme and resources.

This was done though participants' completion of an open-ended qualitative feedback questionnaire which was emailed to all participants by the researcher at the end of the six-week intervention.

4.4.1. Participants' reasons for participating in the programme

As can be seen in Table 4.3. (Page 100), the main reason that participants gave for having participated in the Mindful Student Study was that there was an interest in and curiosity about mindfulness regarding its benefits for personal wellbeing and mental health, in particular, its assistance in helping to manage anxiety and stress. Many saw this as an opportunity to learn stress management skills in order to cope with the academic programme, personal relationships and overwhelming emotions. There was an awareness of the possibility of burnout and a desire to manage well-being so that this did not happen. Some participants were encouraged to participate by previous participants' positive experiences in the face-to-face course.

Table 4. 3. Participants' Reasons for Study Participation

MBChB Year	**Reasons for attending the course**
Year 2	Gain experience with mindfulness & develop a personal practice for the benefit of mental health. Stress & anxiety management, Contribute to research for medical students' mental health. Personal research experience.
Year 3	Manage mental health (anxiety). Increase experience with mindfulness and/or start a personal practice, Learn healthy stress management skills and to prevent burnout, Increase self-care.
Year 4	Curious about mindfulness & had heard positive feedback from previous participants. Explore alternative methods of self-care, Improve mental and overall wellness and well-being, Stress management, To contribute to important research, To gain skills & to manage emotions in relation to the pandemic. Manage anxiety & constant overwhelm. Course was free and fitted in with schedule, To deal with stress & emotions in a positive manner,

	To learn coping strategies to alleviate study and personal relationship stressors.
Year 5	Explore mindfulness as a stress management skill, Curiosity about its benefits, Encouraged by others' reported benefits from learning mindfulness. To learn coping strategies for stress & anxiety, To learn to use mindfulness to cope with personal and academic life, To gain basic knowledge and practical skills
Year 6	Curiosity about mindfulness & its benefits for mental and physical health To manage anxiety & overwhelming emotions, Stress management To learn to manage study issues. To improve appreciation of daily activities

Questionnaires were coded with participants' de-identified numbers before being emailed to an independent thematic analyst for thematic analysis. Thematic analysis identified, examined and recorded patterns (themes and codes) within data which pertained to the research question on the benefit of the six-week programme to optimise wellbeing, increase self-compassion and resilience to stress. The process of coding created established meaningful patterns which were coded into themes as categories for analysis.

Thematic analysis identified four themes for MI participants' responses. These four themes were about the changes in their initial stress reactions, the positive changes which they had noticed in their relationships as well as the feeling of community which they experienced through course interactions. Participants described the barriers to practice which they experienced. These themes can be seen in Appendix 17, page 224.

The four themes which were identified for SC participants' responses were comprised of an awareness of the emotions and reactions, a change in approach to dealing with emotions as well as an increase in consciousness in their relationships with others. This group also experienced barriers to engaging with tools. These themes can be in Appendix 18, page 226.

Each group's themes will now be described in detail.

4.4.2. Mindfulness Group: Themes

The mindfulness intervention was a cognitive training programme which focused on stabilising attention by developing the ability to become conscious of the mind's cognitive reactive patterns without judging or getting caught up in them. This is done by learning to increase the mind's capacity to return to a pre-determined anchor point when mind-wandering naturally takes place.

4.4.2.1. Theme 1: Change in initial stress reaction

Participants' responses described a change in the way they usually responded to stress – their initial stress reaction was calmer and grounded. They noticed that they were more content and relaxed, they reported feeling more aware of the present moment and grounded in their bodies. The positive benefits of being more aware of the present moment were reported in noticing themselves being more focused in their work or their studies with less feelings of being overwhelmed. This was as a result of having learned to 'pause and breathe'.

Subtheme: Pause and breathe

Learning to connect with the breath, to 'pause and breathe' has resulted in a change in participants' initial stress reaction, ten of whom described feeling calmer, more grounded, relaxed, content and less overwhelmed. There is an increased awareness of being able to use different resources when feeling stressed and the benefits they are experiencing.

P10 describes*, 'I have noticed my approach to stressful situations have changed. I have slowed down and allowed the 'pause' practice to help me when I start to become overwhelmed which has definitely helped with my management of stress… to manage moments rather than everything at once'*.

'Mindful eating' was mentioned by both P 31 and P 30 as useful whilst studying and being stressed. The latter describes the use of bringing mindful attention to making a cup of coffee and '*then I use 'mindful eating' to focus on sipping and enjoying my coffee and once this is done, I feel more (sic) calm on returning to my work'*.

Another reported less reliance on medication, '*I would like to think that I have become more relaxed overall. Before tests and exams I usually take Stressams but I found that for assessments while the course was going on, I did not feel the need to do this'* (P35).

Whereas before the course, coping skills were limited resulting in anxiety or overwhelm, now, participants reported increased flexibility in use of the different resources at different times and for different reasons. Short practices (3SBS, the pause, coming to the breath) were noticeably useful during times which had previously felt overwhelming e.g. before a test.

A general summary of participants' increased sense of personal capacity to cope is highlighted by P38's words: *'knowing I have the tools to help me during stressful situations has helped me tremendously. I would be afraid of stress as I knew I did not know how to deal with it well. Now, whenever I am faced with a stressful situation, I try to apply one of the techniques we learnt during the course'*.

Subtheme: Step back from destructive thought processes

There is an increased awareness of being able to step back from destructive thought processes with fourteen participants explaining the benefit of using these techniques to do this. The use of the attitudes of curiosity and non-judging with which they are now paying mindful attention has been of benefit in this change.

'*This skill came from mindfulness practices since a lot of them were focused on noticing sensations in your body without judgment, and so now I have started doing that more with noticing my thoughts and feelings'* (P40) and '*use the approach of kind curiosity to explore the thoughts, feelings and body sensations I experience' (*P20) and '*I now do a breathing exercise to calm myself down, realize that if I messed up, that is okay'* (P21)

P17 described: *'In the past, I think I felt very overwhelmed when I was stressed, but this programme helped (me) to understand that I should not try and push it away and just march forward without acknowledging it; I should rather feel what I am feeling and be gentle with myself. Just by changing this way of thinking, personally I feel that there are less times that I feel overwhelmed, and I just feel calmer in general.'*

Subtheme: Acknowledge that I am not my thoughts: Regain control

Participants report increased recognition of the habit of automaticity, negative patterns of self-talk and triggers which would previously have resulted in extended periods of unhelpful thought as experiences were unhelpfully embellished and distorted. In recognising these maladaptive patterns, a response is chosen which is perceived as more helpful because it creates space between the maladaptive pattern and its typical consequence, helping to be de-centred from destructive thought processes.

'I am now more equipped to identify unhealthy rumination, deep emotion and unconscious thoughts' (P11) and another describes how, *'previously when I felt irritated or agitated with others, I would let those emotions fester and further frustrate me. After the sessions, I find I am aware of the feelings of irritation in the current moment, I acknowledge them and then I am able to let them go, which has made me more accepting of others'* (P30)

Self-critical thoughts and resistance were acknowledged habits by P13, who noted that *'upon completion of the course, I have adopted a more compassionate approach. Allowing myself to notice the stressing factor but not get caught up in it'.*

In summary of this theme, it was reported that there was a change in response to managing challenging emotions and/or experiences, P31 noted, *'I practiced the 3SBS whenever I felt anxious or overwhelmed and stressed while studying. This practice did not reduce the occurrence of these feelings but definitely enabled me to be cognisant and manage it in a more effective and quicker way'*. Similarly, P18 describes how '*I take a task moment by moment instead of stressing over something that is still far in the future'*

These describe the benefits being experienced by participants as indicative of change in their stress response.

4.4.2.2. Theme 2: Positive change in relationships

Subtheme: Kinder to self

Most participants reported that they had become kinder to themselves during the course of the programme, that the inner voice had become less judgmental: *'there's less blame on myself when things go wrong. I'm starting to be more understanding with myself and my fallibility'* (P1) and similarly, P13 who described: *'I adopted a more kind-full and mindful approach to my own self critic'.*

A change in the way that participants treat themselves has resulted in less self-anger and frustration as well as a kinder approach towards themselves when they make mistakes – like all human beings. This has increased self-nurturing and nourishing activities, making them a priority.

'*I don't get angry/frustrated with myself if I get anxious*' (P17). *'I can easily now separate a negative thought or sensation without it leading to a downward spiral'* (P33). *I don't punish myself for my perceived failures'* (P20*). 'I tend to be kinder to myself and allow mistakes to teach me and not break me down or allow less judgment'* (P18*).*

Apart from the inner voice being less judgmental, participants noted the benefit of helping to practice more self-care:

'I enjoy things without guilt or pressure from my to do list' (P33*) and 'I also make time to give myself small acts of kindness… and I find this really enjoyable*. (P20). *'The session in which we expressed words of affirmation and love to ourselves and others beings, truly moved me. A lot of my stress is related to my self-critical nature and so has been very interesting and good for me to try and be more, gentle and loving towards myself'* (P11).

Subtheme: Improved interaction with others

As a result of increased self-compassion, there has been a positive change in relationships with others – in the way that conflict is handled, improved understanding of and support for others. An increased level of self-care is noted.

'I find that my behaviour to myself change(d) and in turn my mood changed. This change led to a positive change with my relationship with people in my life' (P6); *'manage conflict better… disagreements can be resolved more-calm and effectively'* (P15)

There is an awareness of a desire to interact more with others.

'my improved mood also led to me wanting to socialise more (P15*)'; 'felt more capable of supporting others when they were struggling with something'* (P15)*; 'I am able to listen because my anxiety is less when speaking to people' (*P18).

Reluctantly returning home during the pandemic, there is an awareness of a new appreciation for family '*I feel more appreciative of being around my family now than before I started the programme'* (P22); and an understanding and respect for differences '*I felt we should support each other'* (P18)*.*

It has been noticed that regular practice has helped to change behaviour. '*I can notice changes in my behaviour, like I don't easily get irritated with people around me'* (P34). There is also increased self-awareness regarding interactions with others in certain situations '*I think I have become more patient and understanding now with myself and others'* (P40).

As indicated, participants' responses indicate positive changes in intra- and inter-personal relationships.

4.4.2.3. Theme 3: Feeling of a sense of community through course interactions

The pressure of the curricula as well as the enforced isolation because of the COVID-19 pandemic resulted in participants feeling isolated. Through participation in the course, there was an increased sense of community for participants. This is noticeable in the following responses in which feelings and experiences are normalised.

Subtheme: Normalisation of feelings and experiences

My fellow students which (sic) embarked on the same journey, gave me a feeling of community' (P13*). 'Found listening to others' experiences and perspectives to be helpful for my own growth… experience challenges together and know you are not alone'* (P27*); 'having sessions together as a group (was most helpful)* (P37)*';*

'interactive sessions were very useful, informative, and comfortable. A safe space (P11)'. *'I loved the group feedback'* (P37) *'Knowledge is helpful… I realise it is normal and just my brain's way of dealing with things in my life'* (P12).

'All of us were able to feel comfortable expressing our feelings and thoughts openly and honestly, which also helped to enhance the experience, since we learnt a lot from each other as well' (P40).

There is a reported awareness of themselves in relation to others and that similar feelings and experiences are being experienced by the other participants.

'It's an absolute (-ly) amazing programme especially because you get to be aware that most of the feelings and insecurities or thoughts that you are afraid to verbalise someone is also sharing the same thing. Every week there was one or two people that I could relate to EXACTLY what they were saying' (P34).

Subtheme: Supportive facilitation

Participants' comments refer to the environment provided by the online facilitation as an important part of their learning experience. Their comments describe the significance of a safe space to encourage their discussion of experiential exercises and facilitated learning from each other.

'safe space (P40)*' 'comfortable space where we could all share our emotions and challenges* (P38); *appreciated real-time feedback and clarification of any concerns or questions'* (P20)*; 'kindness and encouragement that was given throughout the programme. It helped and made it more comfortable to share'* (P18); *'helpful to have someone to lead every session'* (P17).

The presence of a facilitator was reportedly helpful and encouraging. Punctuality in programme facilitation was appreciated.

'non-judgmental, sets good boundaries and is punctual and respectful of time constraints. These qualities made it feel like a safe and trusted environment' (P20*); 'very approachable and knowledgeable in the course given… always on time and available for extra discussions or help'*(P21*). 'friendliness and non-hostility… there*

was no pressure on us for once, so it didn't feel like a chore. I always looked forward to the sessions' (P1).

Comments about the structure of the course noted the enjoyment of its well-developed structure, its inclusion of many experiential exercises as well as the resources which were emailed after sessions to help with integration of session content as well as provide the links to the home practice audio downloads. The benefit of the material for future reference was also noted.

'Enjoyable, thought-provoking and practical. It addressed serious topics like depression, anxiety, selflove, kindness to others and being present in a subtle, yet effective way…I have access to resources that can be used as refreshers of the programme whenever I need it' (P31).

'Given a good foundation upon which to build for the future' (P35); *'each session had something new and challenged you in a new way* (P27). *'I enjoyed the real-time engagement and appreciated the fact that the practices were backed by research'* (P20).

Weekly meetings encouraged daily practice as well as a sense of achievement.

*'The weekly meetings also gave me a sense of responsibility and accountability which I think I needed to encourage me to do the practices during the week' (*P20);

'*feel a sense of achievement and mastery having partook in it' (*P20*); 'depth into which we went was most helpful'* (P12*); 'enjoyed the flow from one session to another'* (P30).

'this programme was really an amazing experience … the techniques and information I gained… very useful to me now and moving forward' (P 22).

Support of the emails was referred to as helpful and useful for referral to later as well as their benefit in integrating session learning.

'resources useful in clarifying and revising the aspects discussed and also felt it was a helpful guide to understanding and applying the practices' (P12);

Online participation was perceived as problematic at times but beneficial from the point of view of being able to participate from home alone and in private. The structure of the programme was described as contributing to the enjoyment of its online facilitation.

Some enjoyed it to the extent that they would refer it to others. This can be seen in the comments of: ‘extremely helpful programme which I would recommend it to others… I think it’s impossible not to take something away from the experience’ (P27). ‘Great for beginners’ (P27) ‘10/10 would recommend’ (P1).

4.4.2.4. Theme 4: Time as a barrier to practice.

Subtheme: Having time and space

Time constraints are a common issue for medical students, and it was reflected in their comments – particularly in relation to finding time to completing the formal practices. The time that the programme was offered, after classes and clinical work was described as convenient. However, family/ housemates’ interruptions prevented regular practice too:

‘a lot of interruptions at home’ (P18); *‘struggled to find a quiet place’* (P20); *interrupted by other people in the house who did not realise I was mid-practice’* (P35); *‘activity around me’ (*P35); *Although the set class time was known to members of the family as a meeting and respected, but ‘it was a challenge at first to not have that peace and quiet… but over time, adjusted my time of when to do some of the practices in such a way that I get that peace and quiet’* (P34).

The impact of clinical & academic work as well as meetings associated with the university were described as a barrier to practice:

‘my clinical rotation work and projects…I found it difficult to set aside a specific time’ (P27); *‘being on call and working strange hours’* (P38).

Subtheme: Making time and building a habit

Despite the challenge of starting something new, there were examples of participants carving out time for their practice, of working out when the most appealing/convenient time was for practice and then noticing how, with perseverance, the challenge of taking one’s seat became more familiar and encouraging.

'Finding the right time in the day' (P22); *'Initially, just building the habit was challenging'* (P1); *'However, once I was in the routine of things and the practices became more familiar, participation became more enjoyable. I was lucky that I had a space to go to where I could be undisturbed'* (P1) *'I did find that the morning works best for me' (*P22); *'The weekends were very difficult since I usually did the formal ones early in the morning during the week before hospital'* (P40).

Participants reported being able to be flexible as they adapted their schedules to include practices: *'Because of my busy schedule I found it difficult to set aside a specific time for mindfulness. Instead, I incorporated some of the shorter practices (informal practices) into my daily activities to make sure that I practice'* (P27*) 'I thought that since I did the formal practices, it would be ok if I did not always do the informal practices'* (P20).

Reminders to do the practice were also described as a barrier to developing a regular practice and for one participant, confronting personal issues was a barrier to practicing regularly:

*'Confronting some very difficult personal issues made formal scheduling quite difficult'(*P37).

Subtheme: *Ease of incorporating informal practices*

Some of the participants reported enjoyment of the practices' effects and this was a helpful reminder to incorporate informal practices into daily life

'Helpful… because allowed me to include and practice mindfulness in my daily life' (P10) *'My favourite was mindful walking. I can apply it when I walk my dogs… helps me to feel more grounded, and calm'* (P15).

'3-SBS beneficial as I can fit (it) in at any point during the day when I'm feeling overwhelmed' (P15*); 'I can easily practice this anywhere'* (P34).

Informal practices were less time consuming than formal practices which made them easier to incorporate into daily life and busy schedules.

'It does not take up too much time and even just a little bit of practice makes the world of difference (P27)*'. 'I'd make sure to practice these whilst walking to hospital, centring*

myself before presenting to a doctor etc. This was easier' (P3); *I did not experience barriers in doing these practices because they were informal and relatively quick. I also found them easier. These became my go-to practices'* (P27); *'Helpful… could be implemented more often and in many different contexts and spaces' (P11).*

From this feedback it is clear that participants reported substantial benefits from the six-week mindfulness intervention.

4.4.3. Supportive Counselling Group: Themes

The supportive counselling programme was a stress management, psychoeducational programme which focused on the role of emotions in increasing stress and provided a variety of simple tools which could be used to manage this interaction. The first session looked at the different stressors present in a medical student's life and thereafter each session which followed, examined an individual emotion in relation to participants' experiences.

There were four themes and two subthemes identified in the supportive counselling feedback (Appendix 18, page 226).

The four themes will now be discussed in detail.

4.4.3.1. Theme 1: Awareness of emotions and reactions

Subtheme: Awareness triangle was most helpful

During the first session about student stress, participants created a wheel in relation to their stressors following which, the 'awareness triangle' tool was shared. The benefit of this tool was evident in the feedback:

P4 reported: '*I found dealing with each common emotion in a separate emotion has helped me to conceptualise and understand how it may present and how I display this emotion. In each of these sessions, doing the awareness triangle helped me to understand and become aware of how I react to situations*' and similarly, P 39 and P42: '*The awareness triangle helped me deconstruct my anxiety into manageable*

pieces. This calmed me down and enabled me to come out with a plan to reduce my anxiety'.

Subtheme: Awareness improved.

P4 described increased self- awareness and resilience: '*Before these sessions, I was very closed off and irritable due to my inability to manage my emotions and my difficulty in processing what has happened to me. Becoming aware and working through the emotions has helped me to be more emotionally strong and not allowing myself to be consumed. This has then allowed me to be able to find the cause of that particular emotion*'.

P42 noted increased self-awareness and coping with negative thoughts.

'*I am aware of negative thoughts and I try to write my thoughts down and also the solutions so my anxiety is not that bad anymore because I have realised that most of the solutions actually work. So, I don't have to panic anymore thinking that everything is falling apart*'.

There was increased self-awareness in relation to '*the other spokes of the wheel and how they contribute to my mental health and balance*' and this has resulted in being '*more- gentle/kind/ caring towards myself and more understanding of my limitations'* (P32*)*.

P36 reports on increased self-awareness: '*It leads to reflection and helps one think about their own responses and how one has handled things in the past and how one would like to handle things in future'.*

There is an increased awareness in participants of how their moods/emotions affect themselves and others as P28 describes:

'*I'm just a lot more conscious of how my emotions can affect not just me but the people around me'* and similarly, P8 *describes an increased awareness that 'there is no use projecting my frustrations and stress onto the people around me- yes, they can be there to help when appropriate, but the irritable mood and negativity tends to push people away'.*

Subtheme: Use of tools

P8 describes the benefit of expressive writing: '*This frustration is better channelled through journaling … it is a lot easier to address it when your thoughts are in line'* and P42 reports, *'I used to just sleep my stresses off but now I stretch, I keep a journal and I am more open about my problems and setbacks'.*

4.4.3.2. Theme 2: Change in approach to dealing with emotions: Do not become consumed.

Some of the ways in which participants report that they are dealing more effectively with the management of their stress and challenging emotions include:

'*I have been implementing some of the tools taught to us and they have generally made me calmer and allowed me to take a more balanced and understanding approach to my emotions and how to manage them'* describes P29.

Participant 39 describes having many assignments due and the resultant anxiety, '*but when I broke down the anxiety, I was able to calm down and come up with a logical plan. I submitted these projects way before the due date'*.

*'I have a better approach to handling certain situations such as dealing with anger… instead of bottling it up and leaving it to fester, I have adopted the expressive writing tool as a form of emotional relie*f' is how P5 describes a change in dealing with emotions.

'*The sessions encouraged me to restart this activity (journaling) and try to make it a habit to improve interpersonal relationships and have more clear thought processes'* (P8).

Subtheme: Analyse the situation, find solutions

Using a structured approach to examines an experience step by step was found to be helpful in managing the stressful experience.

'I analyse the situation by figuring out if it is something in or out of my control… if it is something in my control, I come up with solutions to alleviate my stress' (P4) *and 'I try to look for the root cause of the stress and deal with that'* (P7)

Various coping strategies have been adopted:

'*I have been submitting assignments a lot earlier… I don't have a deadline looming over my head'* (P29), *'I manage my background stress more effectively so that stressful situations don't push me through the edge'* (P29), and *'I am more open about my problems and setbacks so that I don't have to just sit and think a lot about them. I speak out with my colleagues and we find solutions'* (P42).

4.4.3.3. Theme 3: Increase in consciousness in relationships with others

There is an increase in positive experiences with others as some report wanting to share their skills with those who may benefit or feeling more comfortable about sharing what is bothering them with others around them.

P7 described '*I feel more comfortable telling those close to me when I am stress(ed) or anxious and that has been relieving'* as well as an increased awareness of how it is unhelpful to project frustrations on to others but to use expressive writing to manage (P8) '*I have helped a few people to overcome acute stress'* (P16) as will Participant 36 who noted a desire to share this newly acquired knowledge with a family member to assist them.

4.4.3.4. Theme 4: Barriers to engaging with tools

Subtheme: Emotions

Participants experienced an awareness of painful emotions as a barrier to using the tools – '*I avoided sitting down to work on them because I struggled to feel the emotions and prefer avoiding them. It meant that I would then prefer to just think about them then formally engage with them'* (P2) or '*sometimes being emotionally unavailable to be fully present in the activity'* (P4) or '*maybe relationship difficulties sometimes… even a low moods day*' (P8) and '*I'm not ready for some of these practices eg journaling but I'm slowly working my way towards being more open to trying them out'.*

Subtheme: Time

Like the Mindfulness group, time was described as a barrier to practicing the skills covered in weekly sessions and included*: '*tests, responsibilities at home' *(P4);* 'time management' *(P7*); 'time constraints'; 'day to day life activities, sometimes unexpected things and events pop up and throw you off course' *as well as* 'sometimes you'll find there isn't time or just too tired from the day and feel discouraged to put in that extra effort' *(P8).*

From their feedback, most in the SC group found the programme beneficial in contributing to emotional awareness with increased stress management tools. There was self-reported benefit for themselves as well as their relationships with others.

4.5. Feasibility

4.5.1. Likert Scales

Appendix 19 (page 227) includes information related to attendance, adherence to home practice as well as ratings of programme and resources.

Of the four scales, two related to the number of times (1-6) per week/per day formal or informal practices were completed. Two Likert scales (1[poor] – 5 [excellent]) asked for participants' rating of the programme as well as the resources included. The data was analysed using SPSS.

4.5.2. Attendance

A register of attendance was completed by the researcher at the beginning of each group's session. The six- week programme had a mean number of 4 sessions attended by both groups' participants (*SD*= 1).

4.5.3. Completion of Home Practice

According to the mindfulness participants' self-reported information regarding frequency of formal practice per week, *M= 3* (*SD*= 1.3) in comparison to the mean of 2.3 (*SD* = 1.1) for supportive counselling groups' practice of tools covered in a session.

The mindfulness group self-reported completing informal practices a mean of 2.5 times per day (*SD*= 1.4). This was not relevant to the supportive counselling group.

4.5.4 Participants' Programme Rating

Mindfulness participants rated the mean of the six- week mindfulness programme, 4.5 (*SD*= 0.6) out of a maximum of 5 points. The ratings varied between 3.0 and 5.0.

Supportive counselling participants rated the mean of their six-week programme at 4.5 (*SD*= 0.7), with the ratings varying from 3.0 to 5.0.

4.5.5. Participants' Resources Rating

Resources were rated a mean of 5 (*SD* = 0.0) for the mindfulness participants with the scores ranging from 4.0 – 5.0 (out of 5.0). For the supportive counselling group, the mean for resources was 4.0 (*SD* = 1.0), and scores ranged from 3.0 to 5.0.

The results will now be discussed in Chapter 5.

CHAPTER 5: DISCUSSION

5.1. Introduction

As indicated, medical students experience intense stress during their training. This occurs at a time of potential developmental challenge with insufficient coping strategies. Psychological consequences for themselves as well as their careers and prospective patients may be the result (as seen in Colby et al., 2018; Van Zyl et al., 2017; Naidoo et al., 2014; Van Niekerk et al., 2012; Vivian et al., 2011; Wilson et al., 2010).

Research is showing the effectiveness of MBIs to treat physiological and psychological issues as well as their benefit for nonclinical populations. However, there is limited literature in this area for medical students, and this study aimed to investigate the feasibility and efficacy of a 6-week mindfulness intervention for medical students to optimise wellbeing, increase self-compassion and resilience to stress in comparison to supportive counselling.

Although the study was originally designed as a face-to-face intervention, after the COVID-19 lockdown restrictions continued, HREC2 ethical clearance was sought, and received to facilitate the programmes online.

An experimental, mixed methods approach included the use of both quantitative measures to contribute information regarding outcomes, and qualitative content to provide information regarding participants' experiences and the feasibility of a main study. A combination of quantitative and qualitative methods is useful in reporting on mindfulness studies (as described by Sears et al., 2011) and was appropriate as a MBI had not been introduced in this context before. A mixed method approach would widen and deepen understanding regarding how it was experienced by the participants.

Participants were randomised between the MI and a psychoeducational SC programme. Measures were completed online at baseline, post- and 8-week follow-up. A feedback questionnaire was completed post-programme.

Quantitative result analysis indicated that both groups benefitted from the programmes in which they participated, and that there was a statistically significant time effect noted for CORE-OM (Total), WEMWBS, and SCS-sf. Participants' results indicated reduced

distress, increased wellbeing and reduced perceived stress. However, unexpectedly, self-compassion (total) results decreased over the time period in both groups. The exception was the subscale of mindfulness which noted a significant treatment effect ($p = 0.045$) at post-course analysis.

As a result of qualitative thematic analysis of the questionnaire, four themes were reported for each group which included positive changes in participants' stress management, intra- and inter- personal relationships and for the mindfulness group, a feeling of community with each other as a result of course interactions.

Information about participant recruitment, attendance and retention rates as well as compliance with home practice and online measure completion was collated to determine the positive feasibility of a main study.

The null hypothesis for the study was that the provision of mindfulness training would have no significantly different effect on medical students' distress or self-compassion during the semester of the intervention when compared to those who received supportive counselling. Since both groups reported reduced distress and perceived stress as well as increased wellbeing and benefitted, it would be fitting to accept the null hypothesis. However, there was a difference between the two groups – and this was that following the mindfulness intervention, the MI group was significantly more mindful at post-course analysis.

The results of the study will now be discussed.

5.2. Participants

Forty-five MBChB students from Year 2-6 volunteered to participate in the study and after signing informed consent, completion of pre-course assessment (CORE-OM) and feedback appointment, were randomised in the ratio of 2:1 in favour of the mindfulness intervention. Thirty-eight participants completed the course and submitted online measures at both time points as well as feedback forms.

In relation to the total student number at Stellenbosch University wherein there were 55% female students registered at the whole university in 2020 (Division for

Information Governance, 2021), the study's sample included the participation of more females (71.1%) than males (28.9%).

Regarding participation by year group, Year 4 participants formed the highest percentage (39.5%) of the group, followed by Year 2 (21.1%), Year 5 (18.4%), Year 6 (13.2%) and Year 3 (7.9%).

Paro et al. (2014), and Bullock et al. (2017) noted higher scores in later stage (Year 5 and 6; graduate level) medical students for burnout. Naidoo et al. (2014) reported highest stress levels in Year 5 for female medical students and more stress in Years 1, 3 and 5 in male medical students. Therefore, it would be expected that the highest number of participants in the study would be from Year 5 and/or 6. However, as noted, this was not the case.

One of the main reasons for the higher number of Year 4 medical students in the study could have been as a result of an awareness in their intermediate phase of training, of its toll on themselves, their relationships and quality of life and their desire to take steps to manage this before leaving university. Similar issues were noted in Colby et al.'s (2018) study with Year 4 MBChB students at OFS University and for Dyrbye et al. (2006), for whom burnout was the most common measure of distress in fourth year students.

Some had described the challenges of being back at home during COVID-19 restrictions and having to manage family dynamics and routines after leading independent student lives (pre-course assessment conversation). This was in contrast to Husky et al. (2020) and Cao et al. (2020) who reported decreased anxiety for students who returned home during lockdown in France and China (respectively).

An additional reason for participation may have been an opportunity to interact with fellow students as a result of decreased peer social contact during lockdown when clinical work and patient interaction had been missed as well. Some were experiencing stress at having to organise their own brief clinical practical work before the end of the year. This was exacerbated with the fear of contracting COVID-19 and the possibility of infecting their families. The latter was a similar fear reported by US College students in Son et al. (2020).

It was mentioned by some that the unexpected structure of the online academic year provided some time to participate in the study as recommended by earlier participants. All of the above may have contributed to the most participants being Year 4 participants.

Year 2 students were invited to participate following earlier participants' feedback that Year 2 was the time when the level of pressure increased exponentially and with it, increased stress and anxiety levels. Flisher et al. (2002) and Bowman and Payne (2011) both reported younger students seeking counselling more than older students. The number of Year 2 students perhaps reflects this requirement for extra assistance at this time.

Those who chose to participate were thus not doing so on the recommendation of others who had had previous experience of the study but for reasons like wanting to manage increasing stress levels with online learning challenges. Wits students of Ojo & Onwuegbuzie's study (2020) also reported online learning challenges, and an increased Year 2 academic load. Paradoxically, the increased academic load and tough assessment schedule may also have discouraged potential Year 2 participants.

Unlike Cao et al. (2020) and Husky et al. (2020) whose student sample reported less anxiety in those who had returned home during lockdown, like Year 4's, it is possible that being back at home fulltime was proving stressful. The lack of campus routine and lecture attendance had contributed to disrupted sleep patterns (similarly reported in Son et al., 2020) interspersed with family routines and chores and for some, additional stress management skills provided by either programme, would be beneficial.

Year 6 students had been included in the online study as the restriction of being on campus for contact sessions would not apply if randomised to the SC group with a follow-up online mindfulness programme in 2021. There had been interest expressed by some during the January 2020 recruitment. However, Year 6 students were working clinically from June 1st, once the country's COVID-19 lockdown restrictions had been eased to level 3 (as was experienced by Maharaj, 2020) and the added patient burden may have made some hesitant to participate. Similar to Maharaj (2020), fears that their qualification may be delayed until January may have encouraged final year students to focus on this instead of trying to include an additional commitment at a busy and

stressful time. One who did choose to participate was encouraged by positive reports from Year 5 peers who had participated in the earlier, contact mindfulness group.

With regard to Year 5 student participation, unexpectedly, clinical rotation in the second semester had been grouped into a 12-week block. For many, this entailed being away in unfamiliar surroundings (particularly since many had returned home during lockdown) and uncertainties regarding wifi connectivity and having to adjust to different academic routines. These were amongst some of students' difficulties which were similarly reported in Ojo & Onwuegbuzie (2020). As reported in Son et al., (2020) some participants were concerned about academic performance and not wanting to overburden themselves with extra commitments. Some described their fear at being back in a clinical setting, contracting COVID-19 as well as procedure- and knowledge-rustiness. It was anticipated that it would be difficult to find a quiet space to carry out home practices too. These factors may have contributed to less Year 5 participants volunteering than expected.

Haglund et al. (2009) report Year 3 as a stressful year as medical students adjust to clinical work. It was anticipated that this would be a reason for this year group to form a large number of the sample with online theoretical modules being consecutive and clinical rotation delayed until 2021. Following the first recruitment flyer which I emailed to all Year 2-6 MBChB students in July, a free six-week online programme was offered to Year 3 students by a local psychologist for the first time. This began at the same time as my study and there seemed to be confusion regarding the provision of two, six-week mindfulness programmes simultaneously. At the time, approximately twenty participants took part in the first of the psychologist's two free programmes. A second free programme was offered again, simultaneous to the start of my second online cycle. This number of Year 3 participants in the free offerings affirms the perceived benefit of MBIs but this was probably the main reason for the limited Year 3 participants in my study. The three participants in my study had not participated in the psychologist's free programme.

For the group as a whole, curiosity about mindfulness as a stress management technique and its reported benefits for physical and mental wellbeing was the main reason reported. It was hoped that the practice of mindfulness would help to manage overwhelming emotions (particularly anxiety) associated with their training and that

this knowledge and training would be useful in their prospective professional lives in which they may be at risk from burnout. In addition, there was a desire to increase healthy self-care behaviour and strategies. Others, wished to improve interpersonal relationships.

5.3. Discussion of Quantitative Results

5.3.1. CORE-OM

Participants reported a statistically significant effect in the CORE-OM (Total) results at post-course and 8- WFU. This and results in the subscales demonstrated reduced distress in areas of problems and risk at both time points. Improved wellbeing was noted at intervention conclusion. Functioning improved over time but was not statistically significant.

CORE-OM (Total) & Total – Risk

The improvement of participants' total scores is reflected with the majority of participants' scores moving from above the clinical cut-off point of 10 at baseline to, following programme completion, fewer scores being placed in this category. Scores shifted to healthy and low- level categories.

An explanation for this decrease in distress could be that participants learned new techniques and skills which helped them to manage their stress more effectively. This may have resulted in a sense of personal achievement which affected their perception of their current experiences as less distressing than before the courses. Paro et al. (2014) have noted that higher personal accomplishment scores were linked with decreasing personal distress and also served as a predicting variable for perspective taking.

Furthermore, Redwan et al. (2009), Sreermareddy et al. (2007) and Folkman et al. (1986) noted that positive coping strategies to manage stress do not necessarily result in the absence of stress but a favourably perceived outcome. So, although participants' stressors had not disappeared, their change in approach to them had resulted in reduced levels of distress. This favourable re-perception is associated with increased resilience (as noted in Epstein & Krasner, 2013).

Themes 1, 2, and 3 of the SC group describe the stress management tools of the SC programme as positive coping strategies to manage stress, overwhelming emotions and improving relationships. Likewise, some of the MI group reported use of mindfulness as a stress management technique which provides stability (as has been described in Moore et al., 2020 and Monshat et al., 2013). As participants learn to reperceive their stress (which is as described by Shapiro, S., et al., 2006), increased perspective-taking results in a changed relationship to stress. With this change, there is an increased sense of personal agency and personal accomplishment. Participants from both groups had learned psychoeducational stress management tools and in turn, this may have contributed to enhanced self-efficacy with flexibility and openness to change.

Sisto et al. (2019) report the benefit of learning new techniques to manage stress with increased resilience as a result of flexibility. MI flexibility is noted in their choice of different practices at different times (theme 1) as well as efforts to determine suitable formal practice time and practice space (theme 4). SC openness to change is reflected in subtheme 1, participants' 'use of tools', and theme 2, 'change in approach to dealing with emotions.'

Increased self-efficacy and resiliency result in improved intra- and inter-personal relationships. Participants reported positive changes in relationships (theme 2 of MI group; theme 3 of SC group). The MI group described ways in which they were kinder to themselves (subtheme 2) and that they had noticed that their interactions with others had improved. SC group members remarked on their increased awareness in relationships. This may have encouraged feelings of being supported by others as a consequence. Haldorsen et al. (2014); Cohen and Wills (1985) and Lazarus and Folkman (1985) have also described the benefits of social support in its ability to moderate a primary appraisal of a situation as stressful with collective solutions and healthy behavioural responses.

These may have been possible reasons for the reduced CORE-OM (Total) scores in both groups.

In addition, changes in the Core-Om (Total) score may have been related to positive changes in the wellbeing, problems, total – risk and risk subscales.

These will now be discussed.

Wellbeing subscale

Although there was no significant difference between the two groups with regard to treatment effect, both groups reflected a positive change in well-being at post-course analysis (p=0.022). Similar results of changes at post-course analysis were reported in the literature by Bisseling et al. (2019); Jain et al. (2007); Hogan et al. (2015); Rossouw, J., et al. (2016); Mak et al. (2017) and Kvillemo et al. (2016).

However, these improvements were not maintained at 8 WFU.

This may reflect a need for additional booster/ follow-up sessions following programme completion as is suggested by Schultchen et al. (2020) and/ or a longer follow up period. This would provide an opportunity to assess whether, like Rossouw, J., et al. (2016) treatment effects changed.

Literature describes health professionals' feelings of isolation and need for supportive community networks (Epstein & Krasner, 2013) but it also attests to the importance of MBSR supportive group experience (Rosenweig et al., 2003; Irving et al., 2014 and Malpass et al., 2019). Similarly, Ma et al. (2018) highlights the importance of group support in both a group-based mindfulness intervention and discussion- group in comparison to a self-help and blank control group in the study. Haldorsen et al. (2014) noted social support tempers the effect of stress on wellbeing.

With this in mind, it is worth considering that a further reason for this result may be that perhaps the lack of weekly sessions was felt more keenly by some participants as a loss of community/ group support. MI theme 3 'feeling of a sense of community through course interactions' provided by the weekly sessions highlights the significance of this support for group members. This may have resulted in improvements not being maintained at 8 WFU.

Problems' subscale

Participants' scores reflected a significant change over time effect (p< 0.001*)* at both post- and 8 WFU with regard to their perception of problems.

Bennet & Murphy (1997) report that problem-focused coping strategies actively work to manage and change the source of stress.

In this feasibility study, this use of problem-focused coping strategies by both groups is reflected in the significant change over time effects. This type of strategy was covered in the SC programme (expressive writing & 'Four steps to manage anxiety/sadness/anger) and participants described the benefits of this approach to increased understanding and management of emotions (Theme 1, 'awareness of emotions and reactions').

Similarly, the MI participants used mindfulness as a problem-focused, stress management coping strategy as a way to relate differently to stress. The MI group programme involves encouraging the recognition of cognitive patterns of reactivity-automatic habits of thoughts, feelings, behaviour and impulses to act, which had been used to manage stress. Instead of these reactive patterns, and as recommended in Segal et al. (2013), participants are encouraged to use attitudes of non-judgment and kind, friendly and curious awareness to develop sustained awareness of mental content and inadvertently, increased calmness, ability to focus on studies and work more intently and feeling less overwhelmed by anxiety. This was reported in MI Theme 1, 'change in initial stress reaction'.

This ability to use the techniques as coping strategies is reflected in both groups' changes in stress responses and reflected in MI theme 1 and SC themes 1 & 2. This is more effective than avoidant-coping strategies in managing stress (as reported in Gloria & Steinhardt, 2014; Wu et al., 2013). As seen, too, in Folkman (2008), as emotions were more effectively managed, positive emotions arose alongside the negative ones.

Interestingly, the MI group's mean problem score, almost halved from baseline to post-course and then increased slightly at 8 WFU. In contrast, SC scores decreased from baseline to post- and 8 WFU (Appendix 16, page 221). Although this difference between the groups might appear significant, it was not.

However, the reason for this difference may be a result of the difference in group size. It could also be that the MI group, found mindfulness to be more effective in managing their problems during the course when they were continuing to practice each week.

In addition, they were reminded to continue to practice from listening to others' efforts to adjust schedules to accommodate formal practice and integrate mindfulness into daily life. Hearing others' positive as well as challenging experiences may also have

been motivating for group members as indicated in theme 3- 'feeling of a sense of community through course interactions and subtheme 3 'normalisation of feelings and experience'. The participants were also not receiving the motivational benefit of regular, supervised skill-training sessions which was shown by Parsons et al. (2017) to be the case for participants.

Once the course concluded, so did these reminders as well as perhaps their efforts to practice the techniques in response to stress. This reinforces the importance of booster/follow-up sessions to maintain improvements.

Functioning Subscale

Although functioning scores indicated an improvement over time, it is interesting to note that participants' scores did not reflect any statistically significant effects between the groups or time effect at either post-course analysis or 8 WFU.

In comparison to normative data of Young (2007) and Connell et al. (2007), participants' results are placed within this range (Appendix 16, page 221). This is understandable as this feasibility study's exclusion criteria excluded three participants whose scores fell within the moderate to severe range (20 and higher) and risk sub score reflected a significant decrease effect at both time points. As noted earlier, overtime, both groups' scores improved to reflect placement within the healthy and low distress ranges.

A combination of factors may provide a possible explanation for the consistency in functioning scores.

Literature speaks to the stringency of medical training and the high correlation between stress and burnout (Bullock et al., 2017) and in South African students' levels of burnout and quality of life (Colby et al., 2018) in an overburdened South African health care system (Mayosi & Benetar, 2014). Symptoms of decreased levels of life satisfaction and burnout were noted as risk factors for suicide in medical students (Van Niekerk, 2012). This contrasts with Paro et al.'s (2014) noting of personal accomplishment being the most important association with decreasing personal distress in Brazilian medical students, Van Niekerk et al. (2012) reported that personal accomplishment was the most common burnout dimension in the high category with OFS Year 4 medical students.

Despite South African medical training conditions, medical students continue to function with increased risk of burnout. In addition, Puthran et al. (2016) noted that some students do not seek help for fear of stigma and its effect on their professional record. In Galante et al. (2016), participation in a mindfulness stress management programme is more positively perceived by young adults possibly because it is perceived as a recreational activity which were indicated in Adlaf et al. (2001) as being associated with decreased elevated distress. Recreational activities include social interaction which have been associated with increased wellbeing and reduced distress (Cohen & Wills, 1985).

Bearing the above in mind, perhaps then, participants' consistent functioning scores reflect their continued perseverance in courses and circumstances which are challenging. Despite there being many scores above the clinical cut-off range of 10 and above, at baseline, there seemed to be a reluctance to seek mental health assistance with some unaware of their level of distress until hearing feedback during their pre-course assessments. Participation in this stress management programme was favourably perceived as an extra mural activity. It provided positively received stress management skills which resulted in increased wellbeing, reduced distress and perceived stress but it would take longer for the integration of increased practice and use of the skills to reflect in functioning scores.

Risk subscale

IBIs have been used successfully to address anxiety (Lewis et al., 2012) and to promote wellbeing in young adults (Taylor et al., 2017). IB-MBIs have been used successfully to reduce psychological distress (Spadaro & Hunker, 2016) and to increase mental health and wellbeing (Bailey et al., 2018; Jayawardene et al., 2017).

In this study, both groups' results reflected a statistically significant reduction in this category at both time points ($p< 0.001$). Over the course of the programme, participants in both groups may have felt more capable of managing their stress as they learned and practiced the various skills (and reported in qualitative themes) and this continued after course-completion, indicating increased resilience from having learned new techniques.

A reduction in the Risk score could also have been a result of participants' feeling supported during the learning process by the group and facilitator as reflected in the

MI group's 'subtheme 3 'supportive facilitation' which attested to their experience of this support.

Although not experienced in this context before, this is a benefit of group mindfulness (Kabat-Zinn, 2011; Santorelli, 1999; McCown et al., 2010) and supportive counselling programmes (Markowitz, 2014; Jacobs & Reupert, 2014).

As mentioned, a sense of personal accomplishment was noted in some the feedback comments, and this may have played a role in participants' reduced distress as well.

The CORE-OM (Total) results indicate reduced distress in the participants at both time points providing an indication of the benefit of both programmes.

This was also the case for the WEMWBS results.

5.3.2. WEMWBS

Results of the WEMWBS indicated increases in both groups' participants' wellbeing scores at programme conclusion and at 8 WFU. Although the scores were reduced between post- and 8 WFU, the difference was not significant, indicating that the level of wellbeing was maintained albeit within the average range. In comparison to participants in Galante et al. (2018), Cambridge students' scores following an 8-week contact 'Finding Peace' programme (Appendix 20, page 228) this feasibility study's scores fall within the same range.

There are studies which compare mindfulness with active controls, and which also indicated positive change in both groups.

These studies included:

Jain et al. (2007) compared the effects of mindfulness intervention with relaxation training in a 1-month intervention. Both groups experienced significant reductions in distress and increases in positive mood states over time in comparison to a control group. Participants in the mindfulness intervention demonstrated significant decreases in distractive and ruminative thoughts and behaviours. This was similarly indicated in my research with the MI theme 1 'pause and breathe', 'step back from destructive thought processes' and 'acknowledge that I am not my thoughts'.

Participants in both online groups in Hogan et al. (2015) (mindfulness in action, MIA with pain management psychoeducation) reported equivalent change and significant improvements in ability to manage emotions and distressing events with increased wellbeing. However, subjective wellbeing was more pronounced in MIA participants. Similarly, within this context, and from qualitative content, MI participants' subjective wellbeing appears more pronounced as well.

In a comparison between an IB-MBI and internet-based cognitive therapy programme (Mak et al., 2017), both programmes were reported as effective in improving mental health, psychological distress, life satisfaction and sleep disturbance in students and young adults.

Kvillemo et al. (2016) also reported no statistically significant stronger intervention effect for an 8 week, IB-MBI when compared to a 4-week expressive writing programme. Although attrition was high in this study; 39% completed the IB-MBI compared to 70% completed the expressive writing programme, the potential of an IB-MBI to increase psychological wellbeing was concluded. In my feasibility study, expressive writing was described as effective in managing emotion by the SC group, and may have contributed to increased self-agency.

Interesting results were reported by Ly et al. (2014) in a RCT comparison between two smartphone delivered interventions for people with major depressive disorder. This study evaluated behavioural activation with an MBI and results showed no significant interaction effects of group or time on any of the outcome measures. However, subgroup analyses showed the increased benefit of behavioural activation treatment for participants with higher initial severity of depression whereas, the MBI was more effective among participants with lower initial severity.

With references to the feasibility research, the SC group indicated higher PSS scores and lower WEMWBS scores pre-course than the mindfulness group which may provide some explanation as to the benefit experienced by both groups.

A reason for this may be that the experience of learning new skills provided an opportunity to approach challenges with more self-confidence increasing resilience – the situations had not changed but participants' ability to experience themselves as being capable of facing adversity without being overwhelmed by it, encouraged self-

awareness of inner strengths not previously highlighted for them (as was also highlighted in Southwick & Charney, 2012).

An additional reason for positive change in both groups may be that programmes included supervised practice components. Participants in this feasibility study were provided with opportunities to practice newly introduced skills during the sessions and this experiential component may have contributed to increased wellbeing and reduced perceived stress. Conley et al. (2015) highlight the importance of this component to enhance the efficacy of skills-training programmes.

Both programmes included CBT components which may have been an additional factor contributing to both groups' increased wellbeing scores at both time points.

The time-limited and structured MI programme (based on MBCT) included a variety of CBT techniques. Examples of these skills: 'habit releasers' to change negative patterns, daily home practice to integrate weekly themes, as well as the inclusion of pleasurable activities to restore balance in daily life. The MI subthemes of 'use of resources', 'step back from destructive thought processes' and 'acknowledge that I am not my thoughts: regain control' in Theme 1 as well as Theme 4, 'time as a barrier to practice' indicate implementation (and challenges to use) of these techniques.

The SC programme's CBT skills included the awareness triangle, which was described as helpful in Theme 1, subtheme 1, 'awareness triangle was most helpful' as well as home practice of weekly skills. Participants reported home practice challenges and this discussion encouraged some to put them into practice as well.

CBT techniques were noted in Conley et al. (2015) and Lo et al. (2018) as contributing effectively to the benefit of mental health promotion and prevention skills-training programmes. Furthermore, relaxation interventions in Conley et al.'s (2015) review demonstrated the most overall benefit for supervised skills-training programmes.

The SC programme included progressive muscle relaxation training in session 2 and its benefit was noted in theme 1, subtheme 'use of tools'. Although the MI does not aim to provide relaxation training, participants report relaxation as a consequence of practice as well as a desire to achieve something in return for time and energy spent in formal practise. The MI group's theme 1's subtheme, pause and breathe describes

participants' increased sense of calm and relaxation. These expectations were also noted for some participants in Segal et al. (2013).

An additional reason for increased wellbeing may have been that MI and SC programme facilitation approaches are similar. Both include core Rogerian principles of empathy, genuineness and congruence as well as an attitude of 'not-knowing', close listening, reflection, and positive regard are used to encourage the exploration of an experience (MI) or emotion (SC) with the aim of encouraging participant expression in both client-centred, approaches.

During a session, facilitator exploration of an issue is helpful in providing clarification from which all participants may benefit. Participants in both groups were encouraged to participate as much as felt comfortable. It is possible that being present without the expectation of verbal participation helped to alleviate anxiety for some, as everyone participated.

Both approaches include an awareness of personal strengths to bring about change. This particular non-threatening environment creates a 'safe space' in which the facilitator is not the expert about a participant's experience.

Wellbeing results decreased at 8-week follow-up but had not declined to pre-course levels. Although results did not return to pre-course levels, a decrease suggests as previously mentioned, that 'booster' and/or maintenance sessions would be beneficial in maintaining benefits from both programmes (as in Schultchen et al., 2020; Irving et al., 2014). Similarly, Conley et al. (2015) recommended booster sessions for Year 1 supervised skills-training programmes since research showed modest overall effects for interventions targeting this age group. As noted in Brown et al. (2014) mindfulness is a mental training technique and without practice, this not maintained.

Thus, it is possible that without the formal structure and regularity of weekly sessions, practice of skills slowed or ceased, and this may have resulted in decreased wellbeing scores.

5.3.3. PSS

PSS results demonstrated a highly significant decrease in perceived stress from baseline to post-course and 8 WFU (as did Warnecke et al.'s, 2010 results).

At baseline, PSS mean scores appeared higher in comparison to average US college students (Cohen et al., 1983); Mexican college students' (Gonzalez & Landero, 2007 in Gonzalez et al., 2012) (Appendix 16, page 221). However, these scores fall within the range of Cohen et al. (1983) and Gonzalez & Landero, 2007, in Gonzalez et al. (2012).

PSS scores may have appeared high at baseline as a result of the context of the pandemic in which the study was taking place. Some stressors may have included having to balance an intense academic load with adjustments to online learning following the country's lockdown. Others were, having to cope with an extended and/or unexpected clinical rotation as a result of COVID-19 adjustments. For some on clinical rotation, it was frightening to be exposed to the virus with the distinct possibility of contracting it whilst working in a hospital or clinic. For others, there was the possibility of infecting loved ones with the virus as result of their patient contact and some experienced loss of loved ones and colleagues during the year. All of these could have resulted in high PSS levels.

It was noted, however, that following the intervention, PSS scores decreased, post-course and at 8 WFU. (Moore et al., 2020 also reported significant reductions at 4-month follow up).

Perhaps in this context, despite their challenges, participation provided skills and social support during the unpredictable pandemic experience. As mentioned previously, Adlaf et al. (2001) reported decreased stress levels with recreational participation, and these programmes were not part of an academic programme. Participants had self-selected to participate in an extra-curricular activity from which they gained social interaction during the pandemic when social interactions were restricted.

In addition, the individual feedback sessions had provided an opportunity for participants and facilitator to develop a therapeutic alliance which was maintained during programme facilitation as a result of the distinct programmes' structure as well

as the common goal to address stress management and self-care. Similarly, Bisseling et al. (2019) note the significance of the therapeutic alliance in predicting reduced psychological distress in participants in a MBCT for cancer patients' programme with less attrition.

For perceived stress, Spijkerman et al. (2016) reported that the number of sessions had a positive influence on the effect size – more sessions resulted in higher effect sizes.

Perhaps, shortening the original 8- week programme to 6-weeks and with reduced time (90 minutes to 60) spent in practice, contact and opportunities for psychoeducation about mindfulness in relation to stress management, had the effect of diluting some of the potential benefits which participants may have experienced. However, an awareness of medical students' time constraints had played a major role in the decision to reduce programme length and time. Facilitator adherence to time boundaries was appreciated by participants (as noted in MI Theme 3, subtheme 'supportive facilitation') and longer online sessions had increased cost implications (data as well as time away from studies).

Longer online sessions may have decreased willingness to participate and/or affected attendance. Shorter, simpler practices have been found to be feasible with time-constrained populations (Cavanagh et al., 2018; Kemper, 2017; Beshai et al., 2015; Cavanagh et al., 2013; Carmody & Baer, 2009). Furthermore, with time as the main barrier to frequency of practice between sessions (as reported in theme 3 for MI group, and theme 4 for SC), it appeared to have been the correct choice.

Guided IB-MBIs in comparison to unguided on stress and mindfulness were reported to have a positive influence on effect size (Spijkerman et al., 2016, Conley et al., 2015). Since the SC and MI programmes were teacher facilitated, this may have contributed to the reduced perceived stress results as participants received feedback associated with the practice of new skills which may have contributed to motivation and enhanced behavioural rehearsal.

Perceived stress reflected significant, decreased, post-course and 8 WFU scores for the participants in both groups. As described, the reasons for this may have been varied.

5.3.4. SCS-sf

Neff (2003b) has described three elements of self-compassion as self-kindness (instead of self-judgment or self-criticism), common humanity (instead of isolation) and mindfulness (instead of over-identification). The latter refers to the experience of mindfulness in the presence of distressing self-related thoughts and emotions. The presence of self-compassion is an important predictor of well-being and resilience with lower rates of depression, anxiety and stress (Barnard & Curry, 2011; MacBeth & Gumley, 2012).

Unexpectedly, in this study, participants in both groups showed a significant time effect for decreased SCS-sf (Total) at course-completion and 8 WFU. Although it was noted that baseline data was between Raes et al. (2011)'s normative data (Appendix 21, page 229), this sample was much smaller and therefore, it was not possible to statistically assess variability between participants.

However, possible explanations for this unanticipated result may be the following:

Dobkin et al. (2011) describe increased self-awareness as a result of MBSR participation with resultant discomfort. Therefore, it is possible, that this decrease in self-compassion is a result of increased self-awareness as participants became sensitised to the construct of self-compassion, practice of self-care (or lack thereof) as well as a reflection of an increased awareness of their training conditions and time constraints which prevent self-care and social support. In contrast to this possible explanation, increased self-care and the experienced benefits thereof were reported in the qualitative themes. However, it may be that becoming aware of and having it reflect as established, takes longer than the short data collection at post- and 8 WFU accounted. Instead, this change reflects the start of becoming consciously self-compassionate.

Unlike MBCT and MBSR programmes, a loving kindness practice is introduced in this MBI course, in session 5. Both Kabat Zinn, 2006 (in Segal et al., 2013) and Segal et al. (2013) describe the implicit thread of kindness and compassion in MBSR and MBCT respectively. Segal et al. (2013) note that explicit formal compassion practices were omitted in MBCT because, apart from the facilitator's embodiment thereof, there was a concern that for individuals with a clinical disorder there might be a risk for increased rumination on the words 'happiness' or 'free from harm' (p. 139).

Alternatively, vulnerable individuals may 'strive' to achieve these (rather than the 'offering' of the phrases) which could invoke increased self-judgment/ self-criticism.

Although participants' CORE-OM (Total), WEMWBS and PSS scores did not reflect increased risk, distress and reduced wellbeing, there is a possibility that the introduction of the loving kindness practice may have increased awareness in this particular area in the MI group (as discussion of emotions within the discussion group which occurred in Ma et al., 2018, and which may similarly have occurred with the SC group).

Salzberg (1999) describes the effect of such an intervention having varied effects at different levels and that people may differ in their response thereto as well as the period of time in which benefits may be noted. The reality of this effect on different levels affecting individuals differently, may be the reason for differences in reported self-compassion results in Moore et al. (2020) reporting increased self-compassion results at 4-month follow up which is in contrast to Halamova et al. (2018) who reported increased self-compassionate responding in an IB-MBI but effects short-lived. Galante et al. (2014) report that kindness-based practices were generally shown to promote positive emotion.

Taking these various examples into consideration, in relation to this feasibility's participants' results, it is possible that the varied effects at different levels (as described by Salzberg, 1999) with periods of time differing according to individual differences, resulted in decreased SCS-sf (Total) effect scores.

Neff, 2011 (in Raes et al., 2011) recommends the use of the SCS-sf within time constrained contexts but the use of the longer SCS if the use of the subscales is required. The SCS-sf was selected because of students' time constraints. However, what was noted in this study was that alongside statistically significant positive effects noted in self-kindness (post-; 8WFU) and common humanity (8WFU), there were significant increases in self-judgment (post-; 8WFU), isolation (post-; 8WFU) and over-identification (post-; 8WFU). Interestingly, a treatment between the groups was noted for mindfulness at post-course analysis (p= 0.045).

The relevance of these results will now be explored.

Increases in both positive and negative areas and a small sample size may have resulted in an unexpected decrease in self-compassion (total) result.

A possible explanation for increased positive and negative SCS-sf subscores co-occurring, may be because participants were experiencing what Folkman (2008) terms 'meaning-focused coping' whereby positive and negative emotions are experienced together, with increased resilience. This meaning-focused coping occurred within the context of the pandemic and ongoing medical training pressure but due to programme participation, increased self-awareness may be reflected too. An example of this, is reflected in MI subtheme 2 'kinder to self' as well as subtheme 3 'normalisation of feelings and experiences', and SC subtheme 'awareness improved'.

A significant time effect was noted in self-kindness at pre-course and 8 WFU. Qualitative analysis indicated positive changes in the MI group's intra and interpersonal relationships (Theme 2). Subtheme 'kinder to self' is reflected in an awareness of the inner voice being less judgmental, increased self-care and self-kindness. The increased presence of self-kindness may reflect an increased capacity to be aware of painful feelings with an attitude of kindness and understanding and an ability to respond to thoughts, feelings and behaviour in a proactive, wellbeing enhancing way (as noted in Neff, 2000a). In turn, it would be expected that enhanced self-kindness would enhance interpersonal relationships and this was similarly self-reported by the MI group.

In Theme 1, subtheme 'awareness improved' the SC group also indicated increased self-awareness with some reporting an increased gentleness in self-approach. Increased self-understanding has helped to moderate being overwhelmed by emotions and is reflected in Theme 2 'change in approach to dealing with emotions.'

It would be expected that as a significant time effect was noted for self-kindness for both groups, there would be a significantly decreased time effect in self-judgment. However, this was not the case as self-judgement was significantly increased at both time points for both groups.

A possible explanation may be that as self-critical patterns have developed over time, so too, it takes time to change this behaviour and that the 8 WFU time was too short to reflect changes in this area except to indicate that changes are taking place with the integration of increased self-awareness. Although these programmes are not therapy

per se, they do offer opportunities for self-reflection with change over time as participants come to terms with new insights and make changes in their lives to accommodate new understanding.

As there were significant increases in both self-kindness and self-judgement, there were also changes in both common humanity and isolation - a significant increase in time effect was noted for common humanity at 8 WFU but a significant time effect for isolation at both time points. A similar explanation for this unexpected contrast, may be offered as above as it is contrary to what is expected when participants report an increased sense of social support as well as an increased awareness and acceptance of one's shortcomings as part of being human. A significant increase in isolation seems to be contradictory to the increased sense of support which participants experience in mindfulness groups (as reported in Irving et al., 2014; Epstein & Krasner, 2013).

Perhaps it is a result of the study being offered online as some participants seemed to miss the face-to-face contact and recommended the inclusion of such for follow-up interventions. Although high dropout was not an issue with this study, higher attrition rates occur in online wellbeing programmes and were reported in Moore et al. (2020); Bailey et al. (2018); Mak et al. (2017) and Jayawardene et al. (2017) Tailored feedback was suggested as a recommendation to address attrition.

However, in this study, sessions were teacher-facilitated, and participants were receiving 'real-time' feedback. This was favourably commented on as positive by a participant in one of the sessions. Receiving real-time feedback increases outcome effectiveness (as suggested by Conley et al., 2015). An alternative explanation may be the effect of participation during the pandemic which served to highlight social distancing restrictions as a result of the country's lockdown despite an enhanced sense of common humanity score at 8WFU.

As mentioned above, common humanity reflected a significant time effect at 8 WFU but not at post-course analysis. A possible explanation for this difference may be as described earlier by Salzberg (1999) regarding the varied effects and levels which loving kindness practices can invoke in individuals as well as the time effects for these to reflect. With specific kindness practices introduced in the penultimate session, this

is a further reason to include a longer follow-up period in order to assess integration thereof, realistically.

The main significance of the study was the difference between the two groups with respect to mindfulness at post-course analysis (but not at 8WFU).

This is an indication that the MI group was, through the practice of mindfulness, not getting caught up in distressing thoughts and feelings about the self – not over-identifying with them but instead utilising the skills learned during the course to change their stress response so that they were able to de-centre and adopt a mega-cognitive awareness. This was reflected in their theme 1, 'pause and breathe', 'step back from destructive thought processes' and significantly, 'Acknowledge that I am not my thoughts: regain control' and in doing so, noted in theme 2 'positive changes in relationships'- in particular, 'kinder to self' with less self-judgment, self-anger, self-blame and more self-kindness, self-awareness in relation to their human fallibility and the benefit of self-care.

Ma et al. (2018) and Schellekens et al. (2017) noted increased mindfulness in both MBCT, and supportive-expressive groups and it was suggested that this was as a result of participant sensitisation to, and understanding increased of their emotions.

However, in this research, the difference between the MI and SC groups is highlighted in the management of negative emotions as noted in both SC and MI themes 1 and 2. SC changes reflect changes in the approach to managing the content of stress – through journaling, addressing stress emotions and experiences with the 'four step approach', or noting whether their values were being addressed in their handling of an experience.

MI changes reflected changes in the way in which stress was processed. This was noted in an ability to step back from destructive thoughts with increased awareness as well as an acknowledgement that 'I am not my thoughts: regain control'.

An MBI facilitates direct experience of the practice of mindfulness to pay attention as they are occurring, to adopt a non-judgmental approach and to choose to respond in a positive adaptive way thereby regulating them. This approach is associated with reductions in rumination and distracting thoughts and behaviour (Jain et al., 2007) and it enhances mindfulness and self-compassion for participants. Mindfulness has been

associated too, with enhanced positive mood (Jain et al., 2007). However, self-compassion may take longer to reflect in results as participants actively practice learning to be open to all experiences.

The significant treatment effect of mindfulness was not maintained at 8 WFU. This may have been influenced by the MI group's self-reported more frequent formal and informal practices between sessions, in comparison to the SC group (Appendix 19, Feedback Form data, page 227) during the programme which was then not maintained following course completion which resulted in decreased mindfulness in the MI group. Interestingly, what may support this possibility is that Bowen and Kurz (2012), reported between session practice and participant-rated therapeutic alliance during an 8-week programme, as a predictor of mindfulness at post-course analysis but not at 2- or 4-month follow-up.

Atwoli et al. (2013) attributed South Africa's high level of trauma and lifetime's prevalence of PTSD to its violent history and current levels of increased crime and interpersonal violence. Self-compassion practices may create anxiety in individuals who already experience heightened anxiety in a process described as backdraft by Warren et al. (2016) and Lockard et al. (2014) reported an association between anxiety and reduced self-compassion.

In this study, over half of the group reported more than 8/16 anxiety-associated symptoms in the CORE-OM pre-course assessment, almost forty percent reported half or more symptoms related to being disturbed by unwanted thoughts, feelings and unwanted images or memories and two thirds reported issues with sleep. Thus, the unexpected, decreased total self-compassion score, may also be a reflection of the group's elevated anxiety levels. However, this is in contrast to reported results' reductions in perceived stress and distress and increased wellbeing.

Wilson et al. (1998) reported more female, UCT medical students reported overall stress than male, UCT medical students and Lockard et al. (2014) noted that undergraduate males had higher self-compassion scores than females. In this research study, there were more female medical students. This gender imbalance may have affected the results.

For some participants, end of year examinations were being written at the time when data collection was taking place, and perhaps, entrenched self-critical self-judgements and associated higher anxiety levels were stronger at this time, than newer self-compassionate practices despite decreased perceived stress and increased wellbeing results.

An additional factor which may have played a role in the increased MI mindfulness score at post-course analysis, may have been the supportive facilitation experience (Qualitative subtheme 3) which was not reported by the SC group. This differs from Bowen and Kurz (2012) who noted that client-rated therapeutic alliance was a significant predictor of mindfulness at 2- month follow-up, but not at 4-month follow-up.

SCS-sf (total) results were maintained in MI participants but to less of a degree in the SC participants perhaps indicating that the level of mindfulness reported at course completion was still influencing participants' self-compassion levels despite the lowered SCS-sf total score. Since this difference was not maintained at 8 WFU, it provides an additional indication that booster and/or maintenance sessions following programme completion, are required to maintain this practice.

The quantitative results have provided information regarding the outcomes of the programmes. The qualitative content provides an extra depth to understanding the outcomes as well as participants' experiences.

The qualitative content will now be discussed.

5.4. Discussion of Qualitative Thematic Analysis Themes

Prior to participating in the six- week programmes, the ways in which both groups' participants described their stress management skills, can be summed up in: 'limited, no healthy coping measures to cope with feelings of overwhelm'; 'just march forward without acknowledging it'; 'try to manage everything at once which resulted in overwhelm and not even knowing where to begin'; 'high levels of anxiety control me'. These were clear examples of unhealthy avoidance, problem- and emotion- focused

strategies to manage distressing emotions (responses) and relentless deadlines and assessments (stressors) (Roth & Cohen, 1986).

These 'coping' strategies (Folkman et al., 1986) resulted from their appraisal of their situations (external and internal) as threatening and a perception of personally appraised insufficient resources to cope. This left them feeling, overwhelmed, anxious and panicking with thoughts of wanting to be somewhere other than where they were (sometimes with suicidal ideation, which is reported in students in Bantjes et al., (2016) and in medical students by Van Niekerk et al., 2012), and having to manage what they were experiencing. A participant described it thus, 'I was closed off and irritable due to my inability to manage my emotions and my difficulty in processing what had happened to me'.

When efforts to cope did not reduce stress levels sufficiently or restore an ability to be in control of their stressors, this anger was turned inwards as they perceived themselves as inadequate with ruminating self-judgment, self-criticism and negativity. As one participant described: 'I cause harm to myself by saying bad things to myself'.

The thematic analysis of the information from the feedback forms which 39 participants submitted following the conclusion of the six-week programme, indicated changes in relation to stress management, with both groups reporting less stress than before the start of the programme. There were differences between the two groups regarding their approaches as well as a sense of community reportedly experienced by the MI group.

5.4.1. Changes in approach to stress

Participants in this study reported the use of mindfulness as a stress management tool becoming aware of their individual cognitive reactive patterns as well as the tendency of feelings and body sensations to increase distress in times of challenge (similarly noted in Moore et al., 2020; Monshat et al., 2013). However, with attendance and practice (even irregular or infrequently) this changed, as the study's participants began to experience increased self-awareness, self-compassion and compassion for others. A small but significant association between the quantity of formal practice and positive intervention outcomes was noted in Parsons et al. (2017) which may suggest the same occurred with this feasibility research.

This increased their wellbeing, improved their relationships (intra- and interpersonal) and reflected a reduction in perceived stress. These changes in the mindfulness group reflected 'a capacity to respond to stress in a healthy way' as noted in Epstein & Krasner (2013, p. 301) as well as an indication that it is possible to provide educational skills which develop an attitude of openness to change (as noted by Sisto et al., 2019).

A change in the MI relationship to stress occurred as a result of learning to attend, with intention, to what was currently taking place without judgment. As the SCS-sf mindfulness result indicated, MI participants reported the practice of mindfulness in their approach to managing challenging thoughts and feelings. From the identified themes, there were reported changes in their approach to stress (pause and breathe, step back from destructive thought processes and acknowledge that I am not my thoughts) as well as an increased inclusion of nourishing activities and appreciation of daily activities contributing to a sense of wellbeing. These nourishing self-care activities are 'resource pools' from which effective decisions are made. In turn this increases self-efficacy and coping which promotes the use of resilience-promoting activities (as was noted in Zwack & Schweitzer, 2013).

Moore et al (2020) reported that qualitative assessment indicated participants use of the practices as stress management skills in an effort to 'slow down'. This was affected, through learning to place attention (the first component of mindfulness as described by Bishop et al. 2004) with intention (a third component of mindfulness as described by Shapiro et al. 2006) on an anchor or focal point though use of the practices. There is increased flexibility in using the practice to 'switch' attention as described by Bishop et al. (2004) to focus on what is taking place at that time. Practices are also reportedly used in this stress management capacity to restore calm as did participants in Sears et al. (2011).

As MI participants in this study, continued to practice, there is a developing awareness of an ability in this changed stress reaction (Theme 1), of reduced avoidance behaviour. As in Segal et al. (2013), through the practice of mindfulness, participants describe their ability to view their stress through a newly acquired view of nonreactivity and kindly awareness.

Similar benefits were reported in participants in Sears et al. (2011) who noted the 'how' of paying attention (Bishop et al., 2006; Shapiro, S., et al., 2006) - the second component of mindfulness.

MI participants reported noticing patterns of automaticity and commented on the contribution that attitudes of curiosity and non-judgment made in being able to step out of mindlessness and to reduce feelings of being overwhelmed and stressed whilst being able to pay attention to the experience of the present moment. In adopting an attitude of curiosity, it is possible to use approach instead of avoidance coping strategies. These are strategies which Roth & Cohen (1986) associate with an increased sense of control.

Sears and Kraus, 2009, (in Sears et al., 2011) suggested that alterations in the quality of thought may have a role to play in the way that mindfulness reduces anxiety as was noted by MI participants reported feeling calmer and grounded.

Learning to pay mindful attention had increased an awareness of their ability to pause and breathe, they noted in subthemes 'step back from destructive thought processes' and 'acknowledge that I am not my thoughts', de-center and adopt a meta-cognitive approach.

According to Segal et al. (2013) with reference to this process:

> We can't actually control what comes up in the mind, but we can control what we do next, the next step. And this programme is all about being able to move to a place of awareness from which we choose what the next step is, rather than run off the old habits of the mind (p.119).

A consequence of this increased ability to recognise cognitive, emotional and behavioural reactive patterns is an awareness of being able to choose a response instead of reacting unconsciously as MI described being able to step back from destructive thought process: increase in awareness (subtheme 1).

Significantly there is a change in MI participants perspective as there is an increased awareness that 'I am not my thoughts' (subtheme 1). Shapiro et al. (2006) describe this 're-perceiving' in which there is increased clarity without disconnection or dissociation: 'We experience what *is* instead of a commentary or story about what is' (p. 7). Similar shifts in perspective were noted in Kerrigan et al. (2011).

These changes reflect increased competence in participants' capacity to respond to stress in a healthy way through their ability to manage cognitive reactivity and associated emotional and behavioural reactions (as reported in Sisto et al., 2019; Malpass et al., 2019). There is a strong indication that they have developed coping strategies which include, as described by Friedberg & Malefakis (2018, p.94), an 'adaptive ability to face fear and treat it as a guide rather than as an adversity'. They are dealing more effectively with challenges, and this is indicative of increased resilience.

Most of the participants in the SC group reported benefits from the six-week programme. They reported an increased awareness of their emotions and the impact this had on their levels of stress. Participants reported an ability to manage emotions in a healthy pro-active problem-solving way which increased a feeling of being in control with sufficient skill to manage without being consumed by emotions.

Ma et al. (2018) attributes the importance of group discussion of participants' positive and negative emotion states and emotion regulation techniques in indirectly helping to raise participants' levels of awareness of and provide clarity about their emotions which too would have played a role in results.

However, others, reported an unwillingness to confront challenging emotions and preferred not to use the skills using avoidance coping strategies instead to prevent feelings of being overwhelmed. There were four participants who reported no change in the way they manage stress following the programme.

5.4.2. Changes in relationships

Both groups reported positive change in their relationships. The MI group described increased self-kindness and improved interactions with others (Theme 2). Health promoting activities appeared to be reflected more in MI participants' feedback. As their management of their emotions became more effective, both groups expressed an increased desire to interact socially with others, feeling less overwhelmed during these encounters with enhanced patience and listening skills. For SC participants, there was a reported desire to share their skills (Theme 3).

5.4.3. Sense of community

During thematic analysis, where the two groups differed was in a sense of community (Theme 4). MI participants reported a feeling of community with their fellow students who were participating in the same course- describing it as a journey. The significance of the MBSR's supportive group experience and its strengthening of relationships was similarly noted by Rosenweig et al. (2003); Epstein and Krasner, 2013; Irving et al. (2014) and Aalderen et al. (2012). So too, in Schellekens et al. (2017), for its role as a partial mediator in the effects of a mindfulness-based recovery programme in comparison to supportive expressive group therapy. And in Aalderen et al. (2012), the significance of the group was highlighted as a factor in increased motivation to stay in the programme as well as recognise in others' growth, their own too.

A combination of the practice of mindfulness with group support was believed to have increased efficacy in alleviating reduced psychological distress (Ma et al., 2018) as feelings and experiences are expressed and normalised (Irving et al., 2012; Aalderen et al., 2012). This enables participants to learn from each other, with increased self-awareness and to develop a kinder, less judgmental attitude towards themselves as commonalities were highlighted (Cullen, 2011).

An additional subtheme for the MI group was the supportive facilitation. The co-creation between participants and teacher with teacher as steward for the work that is done during the course, encourages participants to engage with the paradox of mindfulness (as was noted in McCown et al., 2010). The strength of the therapeutic alliance as a contributory factor to the reduction of psychological distress was noted in Bowen & Kurz (2012) as well as Bisseling et al. (2019). Perhaps, this is an additional factor which contributed to both groups' participants wellbeing results as all participants had received feedback following the pre-course assessment in individual interviews, prior to randomisation.

There is an increased awareness of the MI group's interconnectedness between themselves and others (as in Aalderen et al., 2012). Neff (2003b) in defining the concept of self-compassion, refers to the interconnectedness of people, our 'common humanity' as a result of our universal suffering. As does Archbishop Tutu (2000 in

Bartley, 2012, p. xvii) in his description of the same quality of interconnection with 'Ubuntu' whereby,

> 'humans are interconnected because of their 'humanness'… what we do affects the whole world – what we do… spreads out… it is for the whole of humanity'.

5.4.4. Time as a barrier to practice

Although the MI programme was favourably received and highly rated by participants with a high attendance and completion rate, time constraints were reported as the main barrier to developing a regular practice and this was compounded by the challenge of not having a private space in which to practice formal practices. Informal practices were easier to incorporate into daily life. Danilewitz et al. (2018) similarly attributes the main reason for medical students' challenge to develop a mediation practice as time constraints as well as remembering to meditate and feeling too stressed to practice.

Overall, qualitative results showed that both groups experienced the programmes as beneficial but that the mindfulness group reported a change in the way they related to thoughts, feelings and behaviour which increased their sense of personal agency and resiliency in being able to manage their stress better with acceptance of themselves and challenges. Participants reported experiencing benefit from learning in a group with an increased awareness of common experiences and challenges. This in turn, benefitted their relationships with others. Similar results were reported in the qualitative results of Moore et al. (2020); Malpas et al. (2019); Aalderen et al. (2012) and Kerrigan et al. (2011).

Irrespective of group, quantitative and qualitative results indicated that participants experienced reductions in perceived stress (stressors) and an increased ability to manage psychological and physiological responses. Although the supportive counselling group reported an increased awareness of themselves in relation to others, the mindfulness group reported more significant changes in this area.

5.5. Feasibility

The results of the study indicate that participating in a six-week online MBI or psychoeducational supportive counselling programme is related to self-reported increased wellbeing and reduced perceived stress in MBChB students. Although results indicated an increase in mindfulness in the MI group in comparison to the SC group, changes in self-compassion were self-reported in qualitative content.

Results also provide further support for the effectiveness of IB-MBIs. This aligns with Danilewitz et al. (2018) who reported feasibility of online MBI for medical students as well as Moore et al.'s (2020) online, 8-week study with rurally-based medical students which achieved a statistically significant reduction in perceived stress.

5.5.1. Recruitment

With regards to feasibility, recruitment of participants was achieved with 45 participants enrolled in the study over two months. Use of bulk emails and placement of flyers on Year WhatsApp groups were positively received for this purpose. Additional zoom-facilitated 30-minute information sessions were helpful in answering questions and providing information about the programme for those who were interested.

5.5.2. Attrition

Attrition was low with 2 self-withdrawals and mean number of sessions attended 4 out of 6 sessions. The reason for the low attrition in this study may be as a result of the participants' initial feedback session with the Researcher. During this time, it was possible that a strong therapeutic alliance was developed and that this encouraged connection and familiarity, which was enhanced by regular weekly session contact as the researcher was also the interventions' facilitator.

An emphasis on stress management and the learning of particular skills, the distinct structure of the programmes and closed groups, may all have played a role in participants' level of comfort with each other and their sharing of experiences. These factors probably contributed to low participant dropout.

5.5.3. Appropriateness of Session Length

With regard to session length, it was possible to complete two experiential practices with reflection, home practice review and didactic information in 60-minute online sessions. The length of session and programme was acceptable to participants who reported appreciation for punctuality and adherence to session length as well as a mean rating of 4.5 (out of 5) for the online programme. This may also explain good participant attendance (as was noted in Danilewitz et al., 2018).

However, familiarity with the Researcher and the strong therapeutic alliance may have contributed to the Hawthorne Effect in participants with changes in scores a result of the increased attention from the researcher and not solely the intervention. An active control was included to counterbalance this effect.

5.5.4. Content

An appreciation of the inclusion of didactic information was appreciated (an evidence-based approach in both programmes). A mindfulness group participant reported a preference for additional more detailed information in this area in the programme if possible.

5.5.5. Submission of Measures and Feedback form

Completion of online measures was good with 38 of 40 participants having submitted at 8- week follow-up. This contrasts with other studies with students (Moore et al., 2020; Gu et al., 2018; Forbes et al., 2017; Mak et al., 2017; Cavanagh et al., 2013).

5.5.6. Home Practice

Parsons et al. (2017) have noted the link between extent of formal practice and positive intervention outcomes and reported adherence to formal home practice was higher than expected in this feasibility study.

Generally, adherence to practice is reported low in medical students (De Vibe et al., 2018; Erogul et al., 2014; Rosenweig et al., 2003). Increased interaction with staff and/

or integrated email or text reminders were suggested as incentives to increase practice in Wahbeh and Oken (2016).

The self-reported rates may be higher in this feasibility study as a result of interaction with the facilitator (as previously mentioned).

A calendar was provided for participants to keep a record of formal practice, but these were not checked or collected – this could be addressed differently in a main study by requiring submission prior to the next session so that the information can be referenced during home practice feedback. It would be useful to consider though, that although students are used to submitting assignments, the required submission of home practice efforts may reduce motivation to participate with the programme no longer perceived as recreational.

A participant suggested that a complete downloadable resource of all the exercises used in the mindfulness course be provided for participants. An accompanying App to the book, 'Finding Peace in a Frantic World' is available for purchase. However, provision of money for this purchase, could have been construed as enticement. The area of a complete downloadable resource package is an area which could be explored for the main study with possibly a linkage with home practice completion.

Good attendance, session participation and self-reported, fairly regular practice of skills are an indication that students are motivated to participate in both mindfulness and psychoeducational programmes to acquire knowledge and skills for stress management as well as to increase self-awareness and self-acceptance. These were similarly reported by Aheme et al., 2016; Dobkin & Hutchinson, 2013 as students' motivations to participate in this type of programme.

5.6. Strengths

5.6.1. An Opportunity to Participate in Stress Management Programmes

A mindfulness intervention has not been offered in this context before. It was an opportunity to offer a stress management programme for medical students which could provide them with invaluable resources for themselves as well as their future patients. It was an opportunity to offer medical students a programme which research has

shown to be effective elsewhere in managing perceived stress and increasing wellbeing. If not randomised to the mindfulness group, participants also benefitted from a psychoeducational, supportive counselling programme and once thesis is handed in, participate in the mindfulness programme as well.

5.6.2. Online Facilitation

One of the study's strengths was its flexibility in being able to offer the interventions online. I had participated in the online facilitation of this mindfulness intervention through Oxford Mindfulness Centre. Since my training, I had trialled an online pilot programme and I had also participated as an online participant in a MBI before the courses began in August. Thus, I felt capable moving from a contact-offered course to one that was offered online.

Being able to offer the interventions online during the pandemic, may however, have placed the internal validity of the study at risk from history effect whereby participants might have been influenced by events taking place within the global environment and this might have impacted their results (McIntyre, 2005). Although participants' well-being scores increased and perceived stress scores decreased, results for both groups' SCS-sf subscale item isolation resulted in a significant time effect (p= 0.002) at both time points and an awareness of themselves as part of a community reflected in an increased common humanity subscale at 8 WFU (p=0.021).

5.6.3. Mixed Method

The mixed method provided information pertinent to participants' experiences which presented additional information to quantitative measures which addressed the feasibility of this programme within a South African medical educational context. In order to enhance dependability and transferability of the study, a detailed description of the context (participant numbers, data collection time periods and methods) as well as a detailed description of procedure are provided to enable comparisons with other similar studies and because of the difficulties of transferability of qualitative studies (Shenton, 2004). Together, this mixed method provided depth to the study which was unanticipated and served to counterbalance test effect as participants had been

exposed to the measures at various time points and may have become bored (as a result of test repetition) or practiced in answering the questions which is a potential pitfall noted in Bless et al. (2006).

5.6.4. Participant Randomisation

An additional strength of this study was randomisation of participants between an intervention and a control in order to manage selection bias. A control group helps to 'control for participant effects like maturation, history and selection effects' (Mouton & Marais, 1990, p.4). Pre-tests were administered to both groups to indicate that there was no difference between them and to provide baseline data in case there was a high attrition rate. This was a possibility as a six-week MBI had not been offered at the university before and it was difficult to predict whether participants would engage with the material, attend regularly or withdraw due to unforeseen circumstances. It was important to try to cover these possibilities. Both groups participated in equivalently timed sessions which would also have helped to counter selection bias between the two groups.

Although an uneven ratio of participants between groups provided important information regarding feasibility in this pilot project and which may be perceived as a limitation, randomisation helped to ensure the study's external validity and allow for generalisation of results to the student population. External validity and generalisation of results are important considerations when conducting research (as described in McIntyre, 2005).

5.6.5. Active Control

This study's use of an active control is a further strength. Previous studies noted an inactive control/no control as a limitation (Moore et al., 2020; Danilewitz et al., 2018; Bailey et al., 2018; Galante et al., 2018; de Vibe et al., 2013). Use of a control group can result in demoralisation of participants who are randomised into this group after volunteering to participate and learn more about an unfamiliar technique. Such was confirmed in some SC participants' feedback. However, the use of a

psychoeducational programme was perceived favourably by participants as well as the offer of an opportunity to participate in the MBI once this thesis is handed in.

5.6.6. Results

Results indicated an increase in wellbeing in both the CORE-OM and WEMWBS with reduced perceived stress in the PSS over a period of time which were not dependent on intervention. The alignment of these results from different instruments contribute to the validity and trustworthiness of the study. Internal validity refers to the ability of a research study to produce 'accurate and valid findings of the specific phenomena being studied' (Mouton & Marais, 1990, p.50).

Conducting a feasibility study has provided information to inform a larger study.

However, there were limitations.

5.7. Limitations

5.7.1. Access to WIFI

Ojo and Onwuegbuzie (2020) describe the challenges experienced by Wits students with the transition to online learning. One of these is access to network coverage and data costs. Although the university provided free data for students, for some, network coverage was poor. This excluded some participants who had volunteered for the contact sessions.

Intermittent Wi-fi variation for some meant keeping video off – as a facilitator, this was disconcerting to not be able to see participant's faces and reactions. However, some who felt anxious in an online meeting, mentioned this as a positive aspect of the online programme.

One student withdrew during Cycle 3 as a result of the lack of Wifi during the countrywide power outages. A second participant with the same issue, chose to stay in the programme but their attendance was irregular. Provision of session summaries assisted with 'catch-up information'.

5.7.2. Session Attendance

MBChB students who were participating in their elective modules were sometimes unexpectedly delayed at work which necessitated missing a session or late joining a session.

Participation in committee meetings also prevented participants from attending.

Although, sessions began at 5pm and one group was facilitated on Saturday to try to accommodate this, there were still times when participants were not able to attend. Although SU participants did not rate programme content poorly, Aheme et al. (2016) noted that dissatisfaction with placement of an MBI at an inconvenient time during a demanding academic day contributed to Year 1 participants (compulsory) rating the programme content as less satisfactory compared with Year 2 participants who self-elected to participate.

A test scheduled during the week affected attendance for some.

5.7.3. Small, self-selected sample size

The small, sample was self-selected who may be more receptive to mindfulness training or in greater need of a stress management programme. Despite this limitation, their participation and continued engagement with the programme suggests that an online mindfulness programme is feasible and acceptable to medical students and that it may provide invaluable skills to reduce perceived stress and increase wellbeing and self-compassion in this population.

5.7.4. Researcher and Programme Facilitator the same person

An additional limitation was that the researcher was also the facilitator of both programmes. Although this provided consistency across programme facilitation and content, this may have resulted in participants' self-reported benefits, home practice adherence and programme and resource rating being biased by social desirability.

Palmer (1997) notes, that 'we teach who we are' (p.2). As a trained MBI teacher with a daily mindfulness practice as well as the integration of mindfulness into practice as

a Registered Counsellor, this may have been a limitation of the study. One reason may be that it is highly probable, is that the language and implicit mindful approach I used as a teacher in facilitating the SC programme, was not as distinct as it could have been if it had been facilitated by someone without this background. In an effort to manage this, both groups had distinct programmes, but I was the common denominator which may have influenced results in a way which I had not intended.

If this programme was facilitated for additional research in a main study, independent trained Facilitators would reduce this potential bias.

In order to address this limitation with respect to the study's credibility, triangulation was used: both quantitative and qualitative methods were used, four instruments were used to collect data – two reported good internal validity and test-retest reliability (CORE-OM, Evans et al., 2002; WEMWBS, Tennant et al., 2007) and two reported adequate internal and retest reliability (PSS, Cohen et al., 1983 & SCS-sf, Raes et al., 2012).

The Core-Om and WEMWBS have similarities in the constructs of wellbeing and life functioning. Statements which are common to both include: 'I have felt optimistic about my future'(CORE-OM) and 'I have been feeling optimistic about the future' (WEMWBS); 'I have felt ok about myself' (CORE-OM) and 'I've been feeling good about myself' (WEMWBS); 'I have felt warmth and affection for someone' as well as 'I have felt I have someone to turn to for support when needed' (CORE-OM) and 'I've been feeling close to other people' as well as 'I've been feeling loved' (WEMWBS).

The similarity in the construct of problems is evident in the statements between those of the CORE-OM and PSS which include: 'I have felt tense, anxious or nervous' (CORE-OM) and 'In the last month, how often have you felt nervous and stressed' (PSS). This contrasts with the WEMWBS' statement, 'I've been feeling relaxed'. The similarities in the construct of functioning and wellbeing can be seen in the following items: 'I have felt able to cope when things go wrong' as well as 'I have felt overwhelmed by my problems' (CORE-OM) and 'In the last month, how often have you dealt successfully with day-to-day problems and annoyances'; 'In the last month, how often have you felt difficulties were piling up so high that you could not overcome them' and 'In the last month, how often have you felt confident about your ability to handle your personal problems (PSS). The latter statement is also similar to that of

'I've been dealing with problems well' of the WEMWBS. These similarities in the instruments' statements contribute to the study's credibility.

The SCS-sf had no similarities in statements with any of the other measures.

Participants' varying viewpoints were collected via feedback forms. In order to reduce subjective bias, a university Biostatistician assisted with quantitative analysis. Qualitative data was independently assessed by a Research Psychologist without mindfulness experience. An examination of previous research findings is included to assess the congruency of the study's findings to provide 'meaningful coherence' (Tracy, 2010).

Shenton (2004) emphasises that it is important that the results are an accurate reflection of participants' experiences and not a result of the researcher's characteristics and preferences. Ensuring this distinction, will provide confirmability of results.

This can be enhanced through triangulation. In order to address this possibility, the researcher has also provided a description of the studies limitations and the ways in which these have been managed, as well as the researcher's reasons for the choices made.

5.7.5. Inclusion/exclusion criteria

An additional limitation of the study may have been the inclusion/exclusion criteria. Although the mindfulness programme which was used in the study is not usually associated with adverse experiences in non-clinical populations in those who meet the criteria (Galante et al., 2016), the exclusion criteria may have excluded those who would have benefitted from the study. For the main study, it would be preferable to extend the inclusion criteria to include participants with moderate-to- severe scores if they are supported by their health practitioners during the course of the programme.

5.7.6. Eight- Week Follow-up

The follow-up time between post-programme completion and 8 week-follow up may have been too short to reflect accurate changes in participants. A longer follow-up period would be more indicative of change over time for a main study.

5.8. Recommendations

Results indicate that participants in both groups benefitted from the programmes, therefore it is recommended that this type of well-being enhancement programme be offered to students as part of their curriculum but offered in a capacity in which the criteria for pass/fail is participation and attendance rather than result. Regarding the introduction of successful MBI for medical student curricula, it is important that students are self-motivated to attend and actively participate, thereby enhancing benefits. This is emphasised by Aheme et al. (2016) and Dobkin & Hutchinson (2013) too.

Provision of care for the individual's needs and the promotion of a safe environment are also important considerations (Aheme et al., 2016).

In order to address this criterion, this includes placement of programme within the academic day – at the end of a day or as an extra-curricular activity were options suggested by participants as the best possible position for such a programme. This provides an opportunity for participants to continue with self-reflection or mindfulness following a session instead of rushing to a clinical site or next lecture.

Provision of care for individual's needs and the promotion of a safe environment includes the provision of a suitably qualified mindfulness teacher with appropriate experience and training (Epstein, 2020; Crane, 2014; Segal et al., 2013; McCown et al., 2010; Santorelli, 1999; Kabat-Zinn, 2011) as well as appropriate pre-course screening and feedback.

Since the results for both groups indicated a decrease in WEMWBS scores, between post-course and 8 WFU, (and more so in the supportive counselling group), it would be of benefit to offer 'booster' sessions as recommended in Schultchen et al. (2020). Regular 30- minute online mindfulness meetings following course completion and/or

'booster' sessions would assist in maintaining mindfulness practice and benefits which began with the introductory, 6-week programme.

This would be a useful area of future research in order to assess maintenance of benefits over a longer period of time. It would be helpful too, to investigate changes in self-compassion with longer follow-up (6 -12 months) and to use the longer Self-Compassion Scale instead of the SCS-sf if subscale analysis is required.

There is a dearth of literature on mindfulness in medical education (Moore et al., 2020), it would be helpful to provide studies which investigate the benefit of MBIs to address MBChB students' burnout and fatigue as well as assessing the long-term consequences of a formal practice once qualified.

It would be helpful to make use of an app to provide audio downloads in one space (as recommended by a participant) and to manage the home practice record more precisely. This could provide quantitative information regarding the regularity of home practice and outcome and potentially reduce hindsight bias.

It would be useful to research whether this programme is generalisable to students in other degrees or tertiary institutions with the proviso that it is facilitated by suitably qualified teachers. Qualitative studies would provide added depth and breadth in this area (Dobkin & Hutchinson, 2013).

5.9. Conclusion

Research has indicated the potential of MBIs to reduce 'stress and anxiety that accompanies daily life and chronic illness' (Praissman, 2008 in Cullen, 2011) as well as its probability to 'prevent disease, promote health, treat chronic conditions and improve the quality of care … (through) leveraging the body's innate capacity to heal itself, (the introduction of MBIs) may be the key to creating a sustainable healthcare system for the 21st century (Ruff & Mackenzie 2009 in Cullen, 2011).

From the literature provided, it is evident that IBIs are accessible, feasible and effective for the general population and students. As highlighted and recommended, that due to the dearth of literature in this area, there is a need too, for innovative, feasible and engaging programmes for medical students to reduce stress, promote wellbeing and

resilience. Furthermore, exposure to mindfulness during medical school indicates a likelihood of personal and treatment recommendation (McKenzie et al., 2012) and use for sustained stress management with benefits for long term use in doctors (Warnecke et al., 2017).

This feasibility study makes a substantial contribution to addressing the gap in this area indicating that both facilitated, online MBI and psychoeducational programmes are well received by medical students with results indicating significant reductions in perceived stress and increased wellbeing. The introduction of a stress management programme with mindfulness and psychoeducational components is recommended as part of a wider mental health strategy to support wellbeing and enhance resilience to stress. A main study would contribute additional information within this context and the generalisation of findings to benefit South African tertiary students.

REFERENCES

Aalderen, J., Breukers, W., Reuzel, R., & Speckens, A. (2012) The Role of the Teacher in Mindfulness-Based Approaches: A Qualitative Study. *Mindfulness*, 5, 170-178. DOI: 10.1007/s12671-012-0162-x

Adlaf, E., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001) The Prevalence of Elevated Psychological Distress Amongst Canadian Under Graduates: Findings from the 1998 Canadian Campus Survey. *Journal of American College Health,* 50(2), 67-72. Retrieved from https://doi.org/10.1080/07448480109596009

Aheme, D., Farrant, K., Hickey, L., Hickey, E., McGrath, L., & McGrath, D. (2016) Mindfulness-based stress reduction for medical students: optimising student satisfaction and engagement. *BMC Medical Education*,16: 209. doi:10.1186/s12909-016-0728-8 PMID:27535243

Aikens, K., Astin, J., Pelletier, K., Levanovich, K., Baase, C., Park, Y., & Bodnar, C. (2014) Mindfulness Goes to Work Impact of an On-line Workplace Intervention. *Journal of Occupational & Environmental Medicine,* 56(7), 721-731. Doi: 10.1097/JOM. 0000000000000209

Alexander, D., & Hendricks, M. (2018) An overview of psychotherapeutic approaches and different applications of psychotherapy. In Emsley, R., Pienaar, W., & Seedat, S. *Textbook of Psychiatry (4th Ed.)* (pp. 511-529) South Africa: Mental Health Information Centre.

Al Samaraee, A. (2020) The impact of the COVID-19 pandemic on medical education. *British Journal of Hospital Medicine*, 1-4. https://doi.org/10.12968/hmed.2020.0191

Amante, A.; Balmer, C. (2020) Italy rushes new doctors into service as coronavirus deaths rise above 2500. Rome: Reuters: 2020. Available at http://reuters.com/article/us-health-coronavirus/italy-rushes-to-promote-new-doctors-to relieve-coronavirus-crisis-idUSKBN214245. Accessed 15 May 2021

Amr, M., El Gilany, A., & El-Hawary, A. (2008) Does gender predict medical students' stress in Mansoura, Egypt? *Medical Education Online*, 13:1, 4481. DOI: 10.3402/meo.v13i.4481

Anderson, V., Catroppa, C., & Ponsford, J. (date unknown) Outcome Measure (Warwick- Edinburgh Mental Well-being Scale) Retrieved from movingahead.psy.unsw.edu.au/documents/research/outcome

Andersson, G., & Titov, N. (2014) Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry*, 13, (1), 4-11.

American Psychological Association (2010) *Publication Manual of the American Psychological Association (sixth edition)*. Washington DC: American Psychological Association.

Arain, M., Campbell, M., Cooper, C., & Lancaster, G. (2010) What is a pilot or feasibility study? A review of current practice and editorial policy. *BMC Medical Research Methodology*, 10:67 Retrieved from http://www.biomedcentral.com/1471-2288/10/67.

Arnett, J., Zukauskiene, R., & Sugimura, K. (2014) The new life stage of emerging adulthood at ages 18-29 years: implications for mental health. *www.thelancet.com/psychiatry,* 1, 569-576. Retrieved from https://doi.org/10.1016/s2215-0366(14)00080-7

Astin, A. (1997) Stress Reduction through Mindfulness Meditation Effects on Psychological Symptomatology, sense of control and spiritual experiences. *Psychotherapy and Psychosomatics,* 66-97-106. Retrieved from https://doi.org/10.1159/000289116

Atwoli, L., Stein, D., Williams, D., Mclaughlin, K., Petukhova, M., Kessler, R., & Koenen, K. (2013) Trauma and posttraumatic stress disorder in South Africa: analysis from the South African Stress and Health Study. *BMC Psychiatry*, 13:182. Retrieved from http://www.biomedcentral.com/1471-244X/13/182

Bailey, N., Nguyen, J., Bialylew, E., Corin, S., Gilbertson, T., Chambers, R., & Fitzgerald, P. (2018) Effect on Well-Being from an Online Mindfulness Intervention: 'Mindful in May'. *Mindfulness.* Retrieved from https://doi.org/10.1007/s12671-018-0910-7.

Bamber, M., & Schneider, J. (2016) Mindfulness-based meditation to decrease stress and anxiety in college students: A narrative synthesis of the research. *Educational*

Research Review, 18,1-32. Retrieved from https://doi.org/10.1016/j.edurev.2015.12.004

Bantjes, J., Kagee, A., McGowan, T., & Steel, H. (2016) Symptoms of posttraumatic stress, depression, and anxiety as predictors of suicidal ideation among South African university students. *Journal of American College Health*, 64(6), 429-437. DOi:10.1080/07448481.2016.1178120

Barkham, M., Mellor-Clark, J., Connell, J., & Cahill, J. (2006) A core approach to practice-based evidence: A brief history of the origins and applications of the CORE-OM and CORE System. *Counselling and Psychotherapy Research*, 6(1): 3-15. DOI: 10.1080/14733140600581218

Barnard, L., & Curry, J. (2011) Self-Compassion: Conceptualisations, correlates and Interventions*. Review of General Psychology*. Advance online publication. Doi:10.1037/a0025754

Bartley, T. (2012) Mindfulness-Based Cognitive Therapy for Cancer. United Kingdom: Wiley-Blackwell.

Bayram, N., & Bilgel, N. (2008) The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social Psychiatry & Psychiatric Epidemiology,* 43,667-672. DOI 10.1007/s00127-008-0345-x

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2014) The prevalence & correlates of depression, anxiety & stress in a sample of college students. *Journal of Affective Disorders*, 173 (2015), 90-96.

Benatar, S. (2004) Health Care Reform and the Crisis of HIV and Aids in South Africa. *New England Journal of Medicine* 351:1 Retrieved from www.NEJM.ORG

Bennett, P., & Murphy, S. (1997) Psychology and Health Promotion. Buckingham: Open University Press.

Beshai, S., McAlpine, L., Weare, K., & Kuyken, W. (2015) A non-randomised feasibility trial assessing the efficacy of a Mindfulness-Based Intervention for Teachers to reduce stress and improve well-being. *Mindfulness.* Retrieved from DOI: 10.1007/s12671-015-0436-1

Bishop, S., Lau, M., Shapiro, S., Carlson, L., Anderson, N., Carmody, J., Segal. Z., … & Devins, G. (2004) Mindfulness: A Proposed Operational Definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241, 2004.

Bisseling, E., Schellekens, M., Spinhoven, P., Compen, F., Speckens, A., & van der Lee, M. (2019) Therapeutic alliance – not therapeutic competence or group cohesion – contributes to reduction of psychological distress in group-based mindfulness-based cognitive therapy for cancer patients. *Clinical Psychology and Psychotherapy*, 26, 309-318. DOI: 10.1002/cpp.2352

Bless, C., Higson-Smith, C., & Kagee, A. (2006) Fundamentals of Social Research Methods An African Perspective (4th ed.) South Africa: Juta and Company Ltd.

Bodenmann, G., & Meuwly, N., Bradbury, T., Gmelch, S., & Lederman, T. (2010) Stress, anger, and verbal aggression in intimate relationships: Moderating effects of individual and dydadic coping. *Journal of Social & Personal Relationships,* 27(3), 408-424. DOI:10.1177/0265407510361616

Bowen, S., & Kurz, A. (2012) Between session practice and therapeutic alliance as predictors of mindfulness after Mindfulness-Based Relapse Prevention. *Journal of Clinical Psychology,* 68 (3), 236-245. DOI: 10.1002/jclp.20855

Bowman, B., & Payne, J. (2011) A profile of students receiving counselling services at a university in post-apartheid South Africa. Journal of Child and Adolescent Mental Health, 23(2): 143-153 DOI: 10.2989/17280583.2011.634544

Bovier, P., Chamot, E., & Perneger, V. (2004) Perceived Stress, internal resources and social support as determinants of mental health among Young Adults. *Quality of Life Research*, 13(1), 161-170. Retrieved from https://www.jstor.org/stable/403819

Braun, V., & Clarke, V. (2006): Using Thematic Analysis in Psychology. Retrieved from https://uwe-repository.worktribe.com/preview/1043068/thematic_analysis_revised_-_final.pdf

Braun, V., & Clarke, V. (2016): Thematic analysis. *The Journal of Positive Psychology*, 12, (3), 297-298. Retrieved from https://dx.doi.org/10.1080/17439760.2016

Bucci, S., Barrowclough, C., Ainsworth, J., Machin, M., Morris, R., Berry, K., Emsley, R., … Haddock, G. (2018). Actissist: Proof-of-Concept Trial of a Theory-Driven Digital

Intervention for Psychosis. *Schizophrenia Bulletin*, 44(5), 1070-1080. Retrieved from https://doi.org/10.1093/schbul/sby055

Bucci, S., Schwannauer, M., & Berry, N. (2019) The digital revolution and its impact on mental health care. *Psychology & Psychological Therapy,* 92, 277-297. Retrieved from https://doi.org/10.1111/papt.12222

Bullock, G., Kraft, L., Amsden, K., Gore, W., Prengle, B., Wimsatt, J., Ledbetter, L., … Goode, A. (2017) The prevalence and effect of burnout on graduate healthcare students. *Canadian Medical Education*, 8(3), e90-e108. Retrieved from https: //www.ncbi.nim.nih.gov/pmc/articles/pmc5661741

Bunevicius, A., Katkute, A., & Bunevicius, R. (2008) Symptoms of Anxiety and Depression in Medical Students and in Humanities Students: Relationship with Big Five Personality Dimensions and Vulnerability to Stress. *International Journal of Social Psychiatry.* DOI: 10.1177/0020764008090843.

Bystritsky, A., & Kronemyer, D. (2014) Stress and Anxiety Counterpart Elements of the Stress/Anxiety Complex. *Psychiatry Clinics,* 37(4), 489-518. Retrieved from http://dx.doi.org/10.1016/j.psc.2014.08.002

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong. J., & Zheng, J. (2020) The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research,* 287, 112934 Retrieved from https://doi.org/10.1016/j.pschres.2020.112934

Carmody, J., & Baer, R. (2009) How long does a Mindfulness-Based Stress Reduction program need to be? A review of class contact hours and effect sizes for psychological distress. *Journal of Clinical Psychology*, 65(6), 627-638. Retrieved from https://doi.org/10.1002/jclp.20555

Carsley, D., Khoury, B., & Heath, N. (2017) Effectiveness of Mindfulness Interventions for Mental Health in Schools: A Comprehensive Meta-analysis. *Mindfulness.* Retrieved from https: //doi.org/10.1007/s12671-017-0839-2

Carter, N., Bryant-Lukosius, D., Di Censo, A., Blythe, J., & Neville, A. (2014) The use of triangulation in qualitative research. In Cope, D. (Assoc. Ed.) Methods and

Meanings. *Oncology Nursing Forum*, 41(5), 545-546. Retrieved from Pubmed.ncbi.nlm.nih.gov/25158659

Cavanagh, K., Strauss, C., Cicconi, F., Griffiths, N., Wyper, A., & Jones, F. (2013) A randomised controlled trial of a brief mindfulness-based intervention. *Behaviour Research & Therapy,* 51(9), 573-578. Retrieved from https://doi.org/10.1016/j.brat.2013.06.003

Ching, H., Koo, M., Tsa, T., & Chen, C. (2015) Effects of a Mindfulness Meditation Course on Learning and Cognitive Performance among University Students in Taiwan. *Evidence-Based Complementary and Alternative Medicine,* 2015, Article ID 254358. Retrieved from https: dx. doi. org/10.1155/2015/254358

Cohen, S., & Wills, T. (1985) Stress, Social Support and the Buffering Hypothesis. *Psychological Bulletin*, 98 (2), 310-357. Retrieved from https://doi.org/10.1037/0033-2909.98.2.310

Cohen, S., Kamarack, T., & Mermelstein, R. (1983) A Global Measure of Perceived Stress. *Journal of Health and Social Behaviour*, 24(12), 385-396. Retrieved from http://dx.doi.org/10.2307/2136404

Colby, L., Pillay, M., Sallie, F., Van Staden, C., du Plessis, E., & Joubert, G. (2018) The association between the levels of burnout and quality of life among fourth year medical students at the University of the Free State. *South African Journal of Psychiatry,* 24(0),106. Retrieved from https://doi.org/10.4102/sapsychiatry.v24i0.1101

Conley, C., Durlak, J., & Dickson, D. (2013) An evaluative review of outcomes research on universal mental health promotion and prevention programs for higher education students. *Journal of American College Health,* 61(5). DOI:10.1080 / 07448481.2013. 802237

Conley, C., Durlak., J., & Kirsch, A. (2015) A Meta-analysis of University Mental Health Prevention Programs for Higher Education Students. *Prevention Science*, 16, 487-507. DOI 10.1007/s 11121-015-0543-1

Connell, J., Barkham, M., Stiles, B., Twigg, E., Singleton, N., Evans, O., & Miles, J. (2007) Distribution of CORE-OM scores in a general population, clinical cut-off points

and comparison with the CIS-R. *British Journal of Psychiatry*, 190, 69-74. doi:10.1192/bjp.bp.105.017657

Core System Group (1998) *CORE System User Manual*. Retrieved from www.coreims.co.uk/downloads-forms.aspx

Crane, R. (2014) Some reflections on being good, on not being good and on just being. *Mindfulness*. DOI 10.1007/s12671-014-0350-y

Cullen, M. (2011) Mindfulness-Based Interventions: An Emerging Phenomenon. *Mindfulness*. DOI 10.1007/s12671-001-0058-1

Dahlin, M., Joneborg, N., & Runeson, B. (2005) Stress and depression among medical students: a cross-sectional study. *Medical Education.* Retrieved from https://doi.org/10.1111/j.1365-2929.2005.02176.x

Danilewitz, M., Koszycki, D., Maclean, H., Sanchez-Campos, M., Gonsalves, C., Archibald, D., & Bradwejn (2018) Feasibility and effectiveness of an online mindfulness meditation program for medical students. *Canadian Medical Education Journal,* 9(4), e15-e25. Retrieved from http://www.cmej.ca

Daya, Z., & Hearn, J. (2018) Mindfulness interventions in medical education: A systematic review of their impact on medical student stress, depression, fatigue and burnout. *Medical Teacher,* 40(2),146-153. Retrieved from https://doi.org/10.1080/0142159X.2017.1394999

De Longis, A., Folkman, S., & Lazarus, R. (1988) The impact of daily Stress on Health and Mood: Psychological and Social Resources as Mediators. *Journal of Personality and Social Psychology*, 54(3), 486-495. Retrieved from https://doi.org/10.1037/002-3514.54.3.486

Deressa, W., & Azazh, A. (2011) Substance use and its predictors among undergraduate medical students of Addis Ababa University in Ethiopia. *BMC Public Health*. Retrieved from http://www.biomedcentral.com/1471-2458/11/660

De Vibe, M., Solhaug, I., Tyssen, R., Friborg, O., Rosenvinge, J., Sorlie, T., & Bjorndal, A. (2013) Mindfulness training for stress management: a randomised controlled study of medical and psychology students. *BMC Medical Education.* http://bmcmededuc.biomedcentral.com/track/pdf/10.1186/1472-6920-13-107

De Vibe, M., Solhaug, I., Rosenvinge, J., Tyssen, R., Hanley, A., & Garland, E. (2018) Six-year positive effects of a mindfulness-based intervention on mindfulness, coping and well-being in medical and psychology students: Results from a randomised controlled trial. *PLoS One*, 13(4), e196053. doi:10.1371/journal.pne.0196053

De Villiers, C., Cerbone, D., & Van Zijl, W. (2020) The South African government's response to COVID-19. *Journal of Public Budgeting, Accounting & Financial Management.* DOI 10.1108/JPBAFM-0702020-0120

Dimidjian, S., Beck, A., Felder, J., Boggs, J., Gallop, R., & Segal, Z. (2014) Web-based Mindfulness-based Cognitive Therapy for reducing residual depressive symptoms: An open trial and quasi-experimental comparison to propensity score matched controls. *Behaviour Research and Therapy,* 63, 83-89. http://dx.doi.org/10.1016/j.brat.2014.3485

Division for Information Governance (2021) Student Enrolments Overview Official June 2020 Statistics. Accessed at www.sun.ac.za/english/informationgovernance/statistical-profile

Dobkin, P., Irving, J., & Amar, S. (2011) For Whom May Participation in a Mindfulness-Based Stress Reduction Program be Contraindicated? *Mindfulness,* DOI 10.1007/s12671-011-0079-9

Dobkin, P., & Hutchinson, T. (2013) Teaching mindfulness in medical school: where are we now and where are we going? *Medical Education*, 47, 768-779. Retrieved fromhttps://doi.org/10.1111/medu.12200

Draper-Clarke, L., & Edwards, D. (2016) Stress and coping among student teachers at a South African university: An exploratory study. *Journal of Psychology in Africa*, 26(6), 491- 499. Retrieved from https://dx.doi.org/10.1080/14330237.2016.1250425

Dyrbye, L., Thomas, M., Huntington, J., Lawson, K., Novotny, P., Sloan, J., & Shanafelt, T. (2006) Systematic review of depression, anxiety and other indicators of psychological distress among U.S. and Canadian medical students. *Academic Medicine,* 81(4), 354-373.

Eldridge, S., Chan, C., Campbell, M., Bond, C., Hopewell, S., Thabane, L., Lancaster, G., & on behalf of the PAFS consensus group (2016) CONSORT 2010 statement: extension to randomised pilot and feasibility trials. DOI 10.1186/s40814-016-0105-8

Eisenberg, D., Gollust, S., Golberstein, E., & Hefner, J. (2007) Prevalence and Correlates of Depression, Anxiety and Suicidality among University Students. *American Journal of Orthopsychiatry*, 77(4), 534-542. DOI: 10.1037/0002-9432.77.4.534

Epstein, R. (2020) Mindfulness in medical education: coming of age. *Perspectives on Medical Education*, 9, 197-198. Retrieved from https://doi.org/10.1007/s40037-020-00598-w

Epstein, R., & Krasner, M. (2013) Physician Resilience: What it Means, Why it Matters, and How to Promote it. *Academic Medicine*, 88 (3). DOI: 10.1097/ACM.0b013e318280cff0

Erogul, M., Singer, G., McIntyre, T., & Stefanov, D. (2014) Abridged Mindfulness Intervention to support wellness in First-Year Medical Students. *Teaching and Learning in Medicine*, 26(4), 350-356. DOI: 10.1080/10401334.2014.945025

Evans, C., Cornell, J., Barkham, M., Margison, F., McGrath, G., Mellor-Clark, J., & Audin, K. (2002) Towards a standardised brief outcome measure: psychometric properties and utility of the CORE-OM. *British Journal of Psychiatry*,180, 51-60.

Flisher, A., De Beer, J., & Bokhurst, F. (2002) Characteristics of students receiving counselling services at the University of Cape Town, South Africa. *British Journal of Guidance & Counselling*, 30(3). DOI: 10.1080/030698802100002000

Folkman, S. (2008) The case for positive emotions in the stress process. *Anxiety, Stress, & Coping*, 21(1), 3-14. Retrieved from https://doi.org/10.1080/10615800701740457

Folkman, S. (2010) Stress, coping and hope. *Psycho-Oncology,* 19, 901-908 Published online in Wiley Online Library (wileyonlinelibrary.com). DOI:10.1002/pon.1836

Folkman, S., Lazarus, R., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. (1986) Dynamics of a Stressful Encounter: Cognitive Appraisal, Coping, and Encounter Outcomes. *Journal of Personality and Social Psychology*, 50(5), 992-1003.

Folkman, S., & Lazarus, R. (1988) The Relationship between Coping & Emotion: implications for theory & research. *Social Science & Medicine,* 26(3), 309-317. Retrieved from https://doi.org/10.1016/0277-9536(88)90395-4

Forbes, L., Gutierrez, D., & Johnson, S. (2017) Investigating Adherence to an Online Introductory Mindfulness Programme. *Mindfulness,* 9, 271-282. DOI 10.1007/s12671-017-0772-4.

Friedberg, A., & Malefakis, D. (2018) Resilience, Trauma and Coping. *Psychodynamic Psychiatry*, 46(1) 81-113. Retrieved from https://doi.org/10.1521/pdps.2018.46.1.81

Galante, J., Galante, I., Bekkers, M-J., & Gallacher, J. (2014) Effect of Kindness-Based Meditation on Health and Well-being: A Systematic Review and Meta-Analysis. *Journal of Consulting and Clinical Psychology*, 82 (6), 1101-1114. http://dx.doi.org/10.1037/a0037249

Galante, J., Dufour, G., Benton, A., Howarth, E., Vainre, M., Crodace, T., Wagner, A., Stochl. J., & Jones, P. (2016) Protocol for the Mindful Student Study: a randomised controlled trial of the provision of a mindfulness intervention to support university students' well-being and resilience to stress. *British Medical Journal Open* Retrieved from http://dx.doi.org/10.1136/bmjopen-2016-012300

Galante, J., Dufour, D., Vainre, M., Wagner, A., Stochl, J., Benton, Al., Lathia, N., Howarth, E., & Jones, P. (2018) A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study): a pragmatic randomised controlled trial. *The Lancet Public Health,* 3(2), e72-e81. Retrieved from https://doi.org/10.1016/s2468-2667(17)30231-1

Gloria, C., & Steinhardt, M. (2014) Relationships among Positive Emotions, Coping, Resilience and Mental Health. *Stress & Health,* 32, 145-156 DOI:10.1002/smi.2589

Gluck, T., & Maercker, A. (2011) A randomized controlled pilot study of a brief web-based mindfulness training. *BMC Psychiatry,* 11, 175. Retrieved from http://www.biomedcentral.com/1471-244X/11/175.

Golafshani, N. (2003) Understanding Reliability and Validity in Qualitative research. *The Qualitative Report,* 8(4), 597-607. Retrieved from http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf

Gonzalez-Ramirez, M., Rodriguez-Ayan, M., & Hernandez, R. (2012) The Perceived Stress Scale (PSS): Normative Data & Factor Structure for a Large-Scale sample in Mexico. *Spanish Journal of Psychology,* 16, e47,1-9. doi:10.1017/sjp2013.35

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004) Mindfulness-Based Stress Reduction and the health benefits A meta-analysis. *Journal of Psychosomatic Research,* 57, 35-43. Retrieved from https://doi.org/10.1016/s0022-3999(03)00573-7

Gu, J., Cavanagh, K., & Strauss, C. (2018) Investigating the Specific Effects of an Online Mindfulness-Based Self-Help Intervention on Stress and Underlying Mechanisms. *Mindfulness*, 9,1245-1257 Retrieved from https://doi.org/10.1007/s12671-017-0867-y.

Hafferty, FW. (1998) Beyond Curriculum Reform: Confronting Medicine's Hidden Medical Curriculum. *Academic Medicine,* 1998, 73 (4), 403-407. DOI.10.1097/00001888-199804000-00013

Haglund, M., aan het Rot, M., Cooper, N., Nestadt, P., Muller, D., Southwick, S., & Charney, D. (2009) Resilience in the Third Year of Medical School: A prospective study of the associations between stressful events occurring during clinical rotations and student well-being. *Academic Medicine*, 84, (2), 258-268. DOI.10.1097/ACM.0b013e31819381b1

Halamova, J., Kanovsky, M., Jurkova, V., & Kupeli, N. (2018) Effect of a short- term online version of a MBI on self-criticism & self-compassion in a con-clinical sample. *Studia Psychologica*, 60(4), 259-273. DOI:10.21909/sp.2018.04.766

Haldorsen, H., Bak., N., Dissing, A., & Petersson, B. (2014) Stress and symptoms of depression among meical students at the University of Copenhagen. *Scandinavian Journal of Public Health*, 4, 89-95. DOI: 10.1177/1403494813593955.

Hammen, C. (2015) Stress & Depression: old questions, new approaches. *Current Opinion of Psychology*, 4: 80-85. Retrieved from https://doi.org/10.1016/j.copsyc.2014.12.024

Hofmann, S., Sawyer, A., Witt, A., & Oh, D. (2010) The Effect of Mindfulness-Based Therapy on Anxiety and Depression: A Meta-Analytic Review. *Journal of Consulting & Clinical Psychology,* 78(2), 169-183. Doi: 10.1037/a0018555

Holt, N., Bremner, A., Sutherland, E., Vliek, M., Passer, M., & Smith, R. (2012) Psychology: The Science of Mind and Behaviour (2nd ed.) United Kingdom: McGraw-Hill Higher Education.

Hughes, B.M. (2005) Study, examinations, and stress: blood pressure assessments in college students. *Educational Review*, 57(1), 21-36. DOI:10.1080/0013191042000274169

Hurst, C., Baranik, L., & Daniel, F. (2012) College Student Stressors: A Review of the Qualitative Research. Stress and Health Published online in Wiley Online Library (wileyonlinelibrary.com) DOI:10.1002/smi.2465

Husky, M., Kovess-Masfety, V., & Swendsen, J. (2020): Stress and anxiety among university students in France during COVID-19 mandatory confinement. *Comprehensive Psychiatry* 102(2020)152191 https://doi.org/10.1016/j.comppsych.2020.152191

Irving, J., Park-Saltzman, J., Fitzpatrick, M., Dobkin, P., Chen, A., & Hutchinson, T. (2014) Experiences of Health Care Professionals Enrolled in Mindfulness-Based Medical Practice: A Grounded Theory Model. *Mindfulness*, 5, 60-71. DOI: 10.1007/s12671-012-0147-9

Jack, H., Wagner, R., Petersen, I., Thom, R., Newton, C., Stein, A., Kahn, K., Tollman, S., & Hofman, K. (2014) Closing the mental health treatment gap in South Africa: a review of costs and cost -effectiveness. *Global Health Action,* 7, 23431 http://dx.doi.org/10.3402/gha.v7.23431

Jacobs, N., & Reupert, A. (2014) The Effectiveness of Supportive Counselling, based on Rogerian principles: A systematic review of recent international and Australian research. Melbourne: PACFA

Jain, S., Shapiro, S., Swanick, S., Roesch, S., Mills, P., Bell. I., & Schwartz, G. (2007) A Randomized Controlled Trial of Mindfulness Meditation Versus Relaxation Training: Effects on Distress, Positive States of Mind, Rumination, and Distraction. *Annals of*

Behavioral Medicine, 33(1). Retrieved from https://doi.org/10.1207/s15324796abm3301_2

Jannati, Y., Khaki, N., Sangtarashani, EO. Peyrovi, H., & Nojadeh, N. (2012) The effect of supportive counselling program on the academic performance of nursing and midwifery students. *Contemporary Nurse,* 43(1), 113-20. DOI:10.5172/conu.2012.43.1.113.

Jansen, J. (2017) As by fire: The end of the South African university. South Africa: Tafelberg Publishers.

Jayawardene, W., Lohrmann, D., Erbe, R., & Torabi, M. (2017) Effects of preventive online mindfulness interventions on stress and mindfulness: A meta-analysis of randomized controlled trials. *Preventive Medicine Reports,* 5, 150-159. http://dx.doi.org/10.1016/j.pmedr.2016.11.013.

Kabat-Zinn, J. (1994) Wherever you go, there you are. New York: Piatkus Books.

Kabat-Zinn, J. (2011) Some Reflections on the Origins of MBSR, Skilful Means, and the Trouble with Maps. *Contemporary Buddhism*, 12(1). DOI: 10.1080/14639947.2011.564844

Kabat-Zinn, J. (2013) Full catastrophe living Using the wisdom of your body and mind to face stress, pain and Illness. New York: Bantam Books.

Kachra, R., Brown, A. (2020) The new normal: Medical education during and beyond the COVID-19 pandemic. *Canadian Medical Education Journal*, 11(6), e167-e169. https://doi.org/10.36834/cmej.70317

Kemper, K. (2017) Brief Online Mindfulness Training: Immediate Impact. *Journal of Evidence-Based Complementary & Alternative Medicine,* 22(1), 75-80. Retrieved from https://doi.org/10.1177/2156587216639199

Kemper, K., & Yun, J. (2015) Group Online Mindfulness Training: Proof of Concept. *Journal of Evidence-Based Complementary & Alternative Medicine*, 20(1), 73-75. Retrieved from https://doi.org/10.1177/2156587214553306

Keng, S., Smoski, M., & Robins, C. (2011) Effects of Mindfulness on Psychological Health: A Review of Empirical Studies. *Clinical Psychology Review*, 31(6),1041-1056. DOI:10.1016/j.cpr.2011.04.006

Khamees, D., Brown, C., Arribas, M., Murphey, A., Haas, M., & House, J. (2020) In Crisis: Medical Students in the COVID-19 Pandemic. *AEM Education and Training*, 4(3), 284 - 290. Retrieved from https://doi.org/10.1002/aet2.10450

Khawaja, N., & Dempsey, J. (2008) A comparison of International & Domestic Tertiary Students in Australia. *Australian Journal of Guidance & Counselling,* 18(1), 30-46. DOI:10.1375/ajgc.18.1.30

Kronfol, Z., Khalifa, B., Khoury, B., Omar, O., Daouk, S., deWitt, J., Elazab, N., & Eisenberg, D. (2018) Selected psychiatric problems among college students in two Arab countries: comparison with the USA. *BMC Psychiatry*, 18,147. https://doi.org/10.1186/s12888-018-1718-7

Krusche, A., Cyhlarova, E., & Williams, JMG. (2013) Mindfulness online: an evaluation of the feasibility of a web-based mindfulness course for stress, anxiety and depression. *British Medical Journal Open,* 13(3), e0003498. Doi:10.1136/bmjopen-2013-003498

Kvillemo, P., Brandberg, Y., & Branstrom, R. (2016) Feasibility & outcomes of an Internet-Based Mindfulness training Program: A Pilot Randomised Controlled Trial. *JMIR Mental Health,* 3(3), e 33. doi: 10.2196/mental.5457

Kuyken, W., Warren, F., Taylor, R., Whalley, B., Crane, C., Bondolfi, G., … Dalgieish, T. (2019) Efficacy of Mindfulness-Based Cognitive Therapy in Prevention of Depressive Relapse: An Individual Patient Data Meta-analysis from Randomised Trials. *JAMA Psychiatry,* 73(6), 565-574. doi: 10.1001/jamapsychiatry.2016.0076

Lazarus, R.S. (1993) From Psychological Stress to Emotions: A History of Changing Outlooks. *Annual Review of Psychology,* 44, 1-21. 0066-4308/93/0201-001

Lazarus, R., & Folkman, S. (1984) Stress, Appraisal and Coping. New York: Springer.

Letseka, M., & Maile, S. (2008) High University drop-out rates: a threat to South Africa's future. *Human Sciences Research Council Policy Brief*. Retrieved from hsrc.ac.za ISBN:9780 7969 2228 1

Lewis, C., Pearce, J., & Bisson, J. (2012) Efficacy, cost-effectiveness & acceptability of self-help interventions for anxiety disorders: systematic review. *The British journal of Psychiatry,* 200, 15-21. Doi:10.1192/bjp.bp.110.084756

Lo, K., Waterland, J., Todd, P., Gupta, T., Bearman, M., Hassed, C., & Keating, J. (2018) Group Interventions to promote mental health in health professional education: a systematic review and meta-analysis of randomised controlled trials. *Advances In Health Science Education*, 23, 413-447. Retrieved from https://doi.org/10.1007/s 10459-017-9770-5

Lockard, A., Hayes, J., Neff, K., & Locke, B. (2014) Self-Compassion Among College Counselling Center Clients: An Examination of Clinical Norms and Group Differences. *Journal of College Counselling*, 17, 249-259. DOI: 10.1002/j.2161-1882.2014. 00061.x

Loiacono, E., Fulwiler, C., Cohanim, R., & Davis, M. (2018) An Investigation into College Students' Preferences for Technology Integration into Mindfulness-based Stress Reduction. *AIS Transactions on Human-Computer Interaction,* 10(4), 188-204. Retrieved from https://aisel.aisnet.org/thci/vol10/iss4/1

Louw, D., & Edwards, D. (1997) Psychology: An introduction for students in Southern Africa (2nd ed.). Sandton: Heinemann.

Lund, C. (2018) Why Africa needs to start focusing on the neglected issue of mental health. *The Conversation.* Retrieved from https://the conversation.com/africa

Lund, C., Alem, A., Schneider, M., Hanlon, C., Ahrens, J., Bandawe, C., … Susser, E. (2015) Generating evidence to narrow the treatment gap for mental disorders in sub-Saharan Africa: rationale, overview and methods of AFFIRM. *Epidemiology and Psychiatric Sciences*, 24(3), 233-240. Doi:10.1017/s2045796015000281

Ly, K., Truschel, A., Jarl, L., Magnussen, S., Windahl, T., Johansson, R., Carlbring, P., & Andersson, G. (2014) Behavioural activation versus mindfulness-based guided self-help treatment administered through a smartphone application: a randomised controlled trial. *British Medical Journal Open,* 4, e003440. doi:10.1136/bmjopen-2013-003440

Ma, Y., She, Z., Siu, A., Zeng, X., & Liu, X. (2018) Effectiveness of Online Mindfulness-Based Interventions on Psychological Distress and the Mediating Role of Emotion Regulation. *Frontiers in Psychology*. Retrieved from https://doi.org/10.3380/fpsyg.2018.02090

MacBeth, A., & Gumley, A. (2012) Exploring Compassion: A meta-analysis of the association between self-compassion & psychopathology. *Clinical Psychology Review*, 32 (6), pp. 545-552. Retrieved from http://eprints.gla.ac.uk/64162

Madhi, S., Gray, G., Ismail, N., Izu, A., Mendelson, M., Cassim, N., Stevens, W., & Venter, F. (2020): COVID-19 lockdowns in low- and middle-income countries: Success against COVID-19 at the price of greater costs. *South African Medical Journal,* 1 10(8), 724-726. https://doi.org/10.7196/SAMJ.2020.v1 10i8.15055

Maharaj, S. (2020) South Africa and COVID-19: A Medical Student Perspective. *International Journal of Medical Students,* 8(2). DOI 10.5195/ijms.2020.591

Mak, W., Chio, F., Chan, A., Lui, W., & Wu, E. (2017) The Efficacy of Internet-Based Mindfulness Training and Cognitive-Behavioural Training with Telephone Support in the Enhancement of Mental Health Among College Students and Young Working Adults: Randomized Controlled Trial. *Journal of Medical Internet Research,* 19(3), e84. Doi:10.2196/jmir.6737.

Malpass, A., Binnie, K., & Robson, L. (2019) Medical Students of Mindfulness Training in the UK: Well-being, Coping Reserve, and Professional Development. *Education Research International,* 2019*,* 1-10. Retrieved from https://doi.org/10.1155/2019/4021729

Maples, M., & Han, S. (2008) Cybercounseling in the United States and South Korea: implications for counselling college students of the millennial generation and the networked generation. *Journal of Counseling and Development*, 86(2), 178-183. Retrieved from https://doi.org/10.1002/j.1556-6678

Marelli, S., Castelnuovo, A., Somma, A., Castronovo, V., Mombelli, S., Bottoni, D., & Ferini-Strambi, L. (2020): Impact of COVID-19 lockdown on sleep quality in university students and administration staff. *Journal of Neurology*. 268,8-15. Retrieved from https://doi.org/10.1007/s00415-020-10056-10

Markowitz, J. (2014) What is Supportive Therapy? *Focus The Journal of Lifelong Learning in Psychiatry,* 12(3), 285-289. Retrieved from focus.psychiatryonline.org

Mathison, S. (1988) Why Triangulate? *Educational Researcher,* 17(2),13-17. DOI: 10.3102/0013189X017002013

Matsabu, T. (2018) Admin failures over medical internships prompts health departments to get early start on 2019 placements. Retrieved from at https://www.businesslive.co.za/bd/natinoal/health/2018-01-16-admin-failures-over-medical-internships.

Mayosi, M., & Benatar, S. (2014) Health and HealthCare in South Africa- 20 Years after Mandela. *The New England Journal of Medicine*, 372(1),96. Retrieved from DOI: 10.1056/NEJMc1413160

Mazurkiewicz, R., Korenstein, D., Fallar, R., & Ripp, J. (2011) The prevalence and correlations of medical student burnout in the preclinical years: A cross-sectional study. *Psychology Health and Medicine*, 17(2), 188-195. Retrieved from https://doi.org/10.1080/13548506.2011.597770

McGowan, T., & Kagee, A. (2013) Exposure to traumatic events and symptoms of post-traumatic stress among South African university students. *South African Journal of Psychology*, 43(3) 327-339. DOI: 10.1177/0081246313493375

McCowan, D., Reibel, D., & Micozzi, M. (2011) "The Skills of the Teacher" in *Teaching Mindfulness*. New York: Springer.

McIntyre, L. (2005): Need to know: Social Science research methods. International Ed. New York: McGrawHill.

McKenzie, S., Hassed, C., & Gear, J. (2012) Medical and Psychology Students' Knowledge of and Attitudes Towards Mindfulness as a Clinical Intervention. *EXPLORE*, 8(6), 360 – 367. Retrieved from https://doi.org/10.1016/j.explore.2012/08.003

Meicklejohn, J., Phillips, C., Freedman, M., Griffin, M., Biegel, G., Roach, A., … Saltzman, A. (2012) Integrating Mindfulness training into K-12 Education: Fostering the Resilience of Teachers and Students. *Mindfulness*, 3, 291-307. DOI: 10.1007/s 12671-012-0094-5

Mills, J., & Chapman, M. (2016) Compassion and Self-Compassion in medicine: Self-care for the Caregiver. *Australasian Medical Journal*, 9(5), 87-91. Retrieved from http://dx.doi.org/10.4066/AMJ.2016.2583

Mitchell, S. (1993) The Enlightened Heart: An Anthology of Sacred Poetry. New York: Harper Perennial.

Monshat, K., Khong, B., Hassed, C., Norrish, J., Burns, J., & Herrman, H. (2013) 'A Conscious Control over Life and My Emotions': Mindfulness Practice and Healthy Young People. A Qualitative Study. *Journal of Adolescent Health,* 52(5), 572-577. DOI: https://doi.org/10.1016/j.jadohealth.2012.09.008

Moore, S., Barbour, R., Ngo, H., Sinclair, C., Chambers, R., Auret, K., Hassed, C., & Playford, D. (2020) Determining the feasibility & effectiveness of brief online mindfulness training for rural medical students: a pilot study. *BMC Medical Education,* 20,104. Retrieved from https: //doi.org/10.1186/s 12909-020-02015-6

Morrison, J. (2014) DSM-5 Made Easy The Clinician's Guide to Diagnosis. New York: The Guildford Press.

Morledge, T., Allexandre, D., Fox, E., Fu, A., Higashi, M., Kruzikas, D., Pham, S., & Reese, P. (2013) Feasibility of an Online Mindfulness Program for Stress Management- A Randomized, Controlled Trial. *Annals of Behavioural Medicine*, 46)2), 137-148. Retrieved from https://doi.org/10.1007/s12160-013-9490-x

Mouton, J., & Marais, HC. (1990) Basic Concepts in the methodology of the social sciences. South Africa: Human Sciences Research Council.

Naidoo, S., Van Wyk, J., Higgins-Opitz, S., & Moodley, K. (2014) An evaluation of stress in medical students at a South African university. *South African Family Practice,* 56(5), 258-262. Retrieved from http://dx.doi.org/10.1080/20786190.2014.980157

Neff, K. (2003a) The Development & Validation of a Scale to measure Self-Compassion. *Self & Identity*, 2, 223-250. DOI: 10.1080/15298860390209035

Neff, K. (2003b) Self-compassion: an alternative concept of a healthy attitude toward oneself. *Self & Identity*, 2, 85-102. DOI: 10.1080/15298860390129863

Neff, K., & Germer, C. (2013) A Pilot Study and Randomised Controlled Trial of the Mindful Self-Compassion Program. *Journal of Clinical Psychology*, 00(00), 1-17. DOI: 10.1002/jclp.21923

Nell, W. (2016) Mindfulness and psychological well-being among black South African university students and their relatives. Journal of Psychology in Africa Vol 26 (6) 485-490 http://dx.doi.org/10.1080/14330237.2016.1250419

Neuner, F., Schauer, M., Klaschik, C., Karunakara, U., & Elbert, T. (2004) A comparison of Narrative Exposure Therapy, Supportive Counselling, and Psychoeducation for Treating Posttraumatic Stress Disorder in an African Refugee Camp. *Journal of Consulting and Clinical Psychology*, 72(4), 579-587. DOI:10.1037/0022-006X.72.4.579

Nzimande, B. (2020a): Measures to deal with Coronavirus COVID-19 in the post-school education and training sector. *Dept of Higher Education and Training* 17 March 2020. Retrieved from https://www.gov.za/speeches/minister-higher-education-science-and-innovation-statement-measures-deal-covid-19-threat

Nzimande, B. (2020b): Measure to phase out the Coronavirus COVID-19 lockdown and phasing in of PSET strategic functions 30 April 2020. Retrieved from https://www.gov.za/speeches/minister-blade-nzimande-measures-phase-out-coronavirus-covid-19-lockdown-and-phasing-pset

O'Byrne, L., Gavin, B., McNicholas, F. (2020) Medical students and COVID-19: the need for pandemic preparedness. *Journal of Medical Ethics, 46, 623-626.* Doi:10.1136/medethics-2020-106353

Ojo, E., & Onwuegbuzie, A. (2020) University Life in an Era of Disruption of COVID-19: A Meta-Methods and Multi-Mixed Methods Research Study of Perceptions and Attitudes of South African Students. *International Journal of Multiple Research Approaches*, 12(1), 20-55. Retrieved from https://doi.org/10.29034/ijmra.v12n1editorial3

Owoaje, E., Uchendu, O., & Ige, O. (2012): Experiences of mistreatment among medical students in a University in south west Nigeria. *Nigerian Journal of Clinical Practice*, 15(2), 214-219. DOI:10.4103/1119-3077.97321

Palmer, P. (1997) "Teaching from within" in The Courage to Teach. San Francisco: Jossey-Bass.

Paro, H., Silveira, P., Perotta, B., Gannam, S., Enns, S., Giaxa, R., … Tempski, P. (2014) Empathy among Medical Students: Is There a Relation with Quality of Life and Burnout? *PLoS ONE,* 9(4), e94133. doi: 10.1371/journal.pone.0094133

Parsons, C., Crane, C., Parsons, L., Fjorback, L., & Kuyken, W. (2017) Home practice in Mindfulness-based Cognitive Therapy and Mindfulness-based Stress Reduction: A systematic review and meta-analysis of participants' mindfulness practice and its association with outcomes. *Behaviour Research & Therapy*, 95, 29-41. Retrieved from https://doi.org/10.1016/j.brat.2017.05.004

Piet, J., & Hougaard, E. (2011) The effect of mindfulness-based cognitive therapy for prevention of relapse in recurrent major depressive disorder: A systematic review & meta-analysis. *Clinical Psychology Review*, 2011, 31(6), 1032-1040. DOI:10.1016/j.cpr.2011.05.002

Puthran, R., Zhang, M., Tam, W., & Ho, R. (2016) Prevalence of depression amongst medical students: a meta-analysis. *Medical Education,* 50(4), 456-468. Retrieved from https://doi.org/10.1111/medu.12962

Putz, R., O'Hara, K., Taggart, F., & Stewart-Brown, S. (2012) Using WEMWBS to measure the impact of your work on mental wellbeing: A practice-based user guide. Retrieved from https://www.corc.uk.net/media/1244/wemwbs-practitionersguide.pdf

Quek, T., Tam, W., Tuan, B., Zhang, M., Zhang, Z., Ho, C., & Ho, R. (2019) The Global Prevalence of Anxiety among Medical Students: A Meta-Analysis. *International Journal of Environmental Research and Public Health*, 16, 2735. doi:10.3390/ijerph161 52735

Querstret, D., Cropley, M., & Fife-Schaw, C. (2018) The Effects of an Online Mindfulness-Intervention Perceived Stress, Depression and Anxiety in a Non-clinical Sample: A Randomised Waitlist Control Trial. *Mindfulness,* 9,1825-1836. Retrieved from https://doi.org/10.1007/s12671-018-0925-0

Querstret, D., Morison, L., Dickinson, S., Cropley, M., & John, M. (2020) Mindfulness-Based Stress Reduction & Mindfulness-Based Cognitive Therapy for Psychological Health and Wellbeing in Nonclinical samples: A Systematic Review & Meta-Analysis. *International Journal of Stress Management,* 27(4), 394-411. Retrieved from http://research.stmarys.ac.uk/id/eprint/3944

Raes, F., Pommier, E., Neff, K., & Gucht, D. (2011) Construction and factorial validation of a short form of the self-compassion scale. *Clinical Psychology and Psychotherapy*, 18, 250-255. DOI: 10.1002/cpp.702

Rathod, S., Pinninti, N., Irfan, M., Gorczynski, P., Rathod, P., Gega, L., & Naeem, F. (2017) Mental Health Service Provision in Low-and Middle-Income Countries. *Health Services Insights,* 10, 1-7. DOI:10.1177/1178632917694350

Random Number Generator: commentpicker.com/team generator.php.

Reber, A., & Reber, E. (2001) The Penguin Dictionary of Psychology (3rd ed.) England: Penguin Books.

Redhwan, A., Sami, A., Karim, A., Chan, R., & Zaleha, M. (2009) Stress and Coping Strategies among Management and Science University Students: A Qualitative Study. *The International Medical Journal*, 8(2). DOI:https://doi.org/10.31436/imjm.v812.751

Regehr, C., Glancy, D., & Pitts, A. (2013) Interventions to reduce stress in university students: a review and meta-analysis. *Journal of Affect Disorders,* 148(1), 1-11. DOI: 10.1016/j.jad.2012.11.026.

Rice, P. (1992) Stress and Health (2nd ed.) California: Brooks/Cole Publishing Company.

Rogers, D. (2016) Does a brief workshop change clinical associate students' resilience? *African Journal Primary Health Care Family Medicine*, 8(1), a1183. http://dx.doi.org/10.4102/phcfm.v8i1.1183

Roberts, R., Golding, J., Towell, T., & Weinreb, I. (1999) The Effects of Economic Circumstances on British Students' Mental & Physical Health. *Journal of American College Health,* 48(3), 103-109. Retrieved from https://doi.org/10.1080/07448449909595681

Rose, S. (2020) Medical Student Education in the Time of COVID-19. *American Medical Association,* 323 (21), 2131-2132. Retrieved from https://jamanetwork.com/ on 04/20/2021.

Rosenweig, S., Reibel, D., Greeson, J., Brainard, G., & Hojat, M. (2003) Mindfulness-based stress reduction lowers psychological distress in medical students. *Marcus*

Institute of Integrative Health, Paper 1. Retrieved from http://jdc.jefferson.edu/jmbcimfp/1

Rotenstein, L., Ramos, M., Torre, M., Segal, B., Peluso, M., Guille, C., Sens, S. & Mata, D. (2016) Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation among Medical Students A Systematic Review and Meta-Analysis. *JAMA,* 316(21), 2214-2236. DOI: 10.1001/jama.2016.17324

Roth, S., & Cohen, L. (1986) Approach, Avoidance & Coping with Stress. *American Psychologist,* 813-819. 003-066X/86/$00.75

Rossouw, L., Seedat, S., Emsley, R., Suliman, S., & Hagemeister, D. (2013) The prevalence of burnout and depression in medical doctors working in the Cape Town Metropolitan Municipality community healthcare clinics and district hospitals of the Provincial Government of the Western Cape: a cross-sectional study. *South African Family Practice,* 55(6), 567-573. DOI:10.1080/20786204.2013.10874418

Rossouw, J., Yadin, E., Alexander, D., Mbanga, I., Jacobs, T., & Seedat, S. (2016) A pilot and feasibility randomised controlled study of Prolonged Exposure Treatment and supportive counselling for post-traumatic stress disorder in adolescents: a third world, task-shifting, community-based sample. *BioMedCentral Trials*, 17,548. DOI: 10.1186/s13063-016-1677-6

South African Committee of Medical Deans (2018): Press statement by SACoMD Retrieved from https://www.sun.ac.za/english/Lists/news/DispForm.aspx?ID=5702

Saal, P. (2017) New doctors devastated at lack of opportunity to do compulsory internship. Retrieved from https://www.businesslive.co.za/bd/national/health/2017-05-03-newdoctors-devastated-at-lack-of-opportunities.

Salzberg, S. (1999) Mindfulness & Loving Kindness. *Contemporary Buddhism*, 12(1). DOI: 10.1080/14639947.2011-564837

Santorelli, S. (1999) Heal Thy Self Lessons on Mindfulness in Medicine. New York: Three Rivers Press.

Schellekens, M., Tamagawa, R., Labelle, L., Speca, M., Stephen, J., Drysdale, E., & Carlson, L. (2017) Mindfulness-Based Cancer Recovery (MBCR) versus Supportive Expressive Group Therapy (SET) for distressed cancer survivors: evaluating

mindfulness & social support as mediators. *Journal of Behaviour Medicine,* 40, 414-422. DOI: 10.1007/s10865-016-9799-6

Schifferdeck, K., & Reed, V. (2009) Using mixed methods research in medical education: basic guidelines for researchers. *Medical Education*, 43, 637-644. Doi: 10.1111/j.1365-2923.2009.03386.x

Schneider, M., Baron, E., Breuer, E., Docrat, S., Honikman, S., Kagee, A., … Lund, C. (2016) Integrating mental health into South Africa's health system: current status and way forward. *South African Health Research,* (13), 153-163. Retrieved from journals.co.za/doi/pdf/10.10520/EJC 189311

Schultchen, D., Kuchler, A-M., Schillings, C., Weineck, F., Karabatsiakis, A., Ebert, D., Baumeister, H., & Pollatos, O. (2020) Effectiveness of a guided online mindfulness-focused intervention in a student population: Study protocol for a randomised control trial. *British Medical Journal Open,* 10: e 032775. doi:10.1136/bmjopen-2019-032775

Sears, S., Kraus, S., Carlough, K., & Treat, E. (2011) Perceived Benefits and Doubts of Participants in a Weekly Meditation Study. *Mindfulness,* 2,167-174. DOI:10.1007/s12671-011-0055-4

Segal, Z., Bieling, P., Young, T., MacQueen, G., Cooke, R., Martin, L., Block, R., & Levitan, R. (2010) Antidepressant Monotherapy vs Sequential Pharmacotherapy and Mindfulness-Based Cognitive Therapy or Placebo, for Relapse Prophylaxis in Recurrent Depression. *Archives of General Psychiatry*, 67(12), 1256-1264. Doi:10.1001/archgenpsychiatry.2010.168

Segal, Z., Williams, M., & Teasdale, J. (2013) Mindfulness-Based Cognitive Therapy for Depression (2nd ed.) New York: The Guildford Press.

Selye, H. (1988) Stress: Its relationship to man and his environment. *Ekistics,* 55, (331/ 332), Stress and urban stress (July/ August- September/October 1988), 162-167. Retrieved from https://wwwjstor.org/stable/43623031

Semo, B., & Frissa, S. (2020) The Mental Health Impact of the COVID-19 Pandemic: Implications for Sub-Saharan Africa. *Psychology Research & Behaviour management* 2020; 13: 713-720. Retrieved from https://doi.org/10.2147/PRBM.S264286

Shapiro, J. (2011) Does Medical Education Promote Professional Alexithymia? A Call for Attending to the Emotions of Patients and Self in Medical Training. *Academic Medicine*, 86(3), 326-332. DOI: 10.1097.ACM.0b013e3182088833

Shapiro, S., Schwartz, G., & Bonner, G. (1998) Effects of Mindfulness-Based Stress Reduction on Medical and Premedical Students. *Journal of Behavioural Medicine*, 21(6), 581-599. Retrieved from 0160-7715/98/1200-581

Shapiro, S., Astin, J., Bishop, S., & Cordova, M. (2005) Mindfulness-Based Stress Reduction for Health Care Professionals: Results from a Randomised Trial. *International Journal of Stress Management,* 12(2), 164-176. DOI: 10.1037/1072-5245.12.2.164

Shapiro, S., Carlson, L., Astin, J., & Freedman, B. (2006) Mechanisms of Mindfulness. *Journal of Clinical Psychology,* 62(3), 373-386. DOI:10.1002/jclp.20237

Shenton, A. (2004) Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, 63-75. Retrieved from 0167-8329/04

Shaikh, B., Kahloon, A, Kazmi, M., Khalid, H., Nawaz, K., Khan, N., & Khan, S. (2004) Students, Stress and Coping Strategies: A Case of Pakistani Medical School. *Education for Health*, 17(3), 346-353. DOI:10.1080/13576280400002585

Shatford, L., & Evans, D. (1986) Bulimia as a manifestation of the stress process: A LISREL causal modelling analysis. *The International Journal of Eating Disorders*, 5(3) 451-473. Retrieved from https://doi.org.10.1002/1098-108X(198603)5:3<451

Silverton, S., Fennell, M., & Bartley, T. (2011) Teaching mindfulness-based programmes-contexts, groups and populations- and how we might respond to them. Handout for Mindfulness Master's Teaching 2 Module, CMRP, Bangor University in Reader Content Module 3 August 2016: The Courage to Teach: The person and presence of the teacher. South Africa: University of Stellenbosch.

Sisto, A., Vicinanza, F., Campanozzi, L., Ricci, G., Tartaglini, D., & Tambone, V. (2019) Towards a Transversal Definition of Psychological Resilience: A Literature Review. *Medicina,* 55, 745. DOI:10.3390/medicina55110745

Smeets, E., Neff, K., Alberts, H., & Peters, M. (2014) Meeting Suffering with Kindness: Effects of a Brief Self-Compassion Intervention for Female College Students. *Journal*

of Clinical Psychology, 70(9), 794-807. Retrieved from https://doi.org/10.2147/PRBM.S264286

Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020): Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study. *Journal of Medical Internet Research,* 22(9), e21279. doi10.2196/21279

Southwick, S., & Charney, D. (2012) The Science of Resilience: Implications for the Prevention & Treatment of Depression. *Science,* 338(6103). Retrieved from http://science.sciencemag.org DOI.10.1126/science.1222942

Spadaro, K., & Hunker, D. (2016) Exploring The effects of an online asynchronous mindfulness meditation intervention with nursing students on Stress, mood, and Cognition: A descriptive study. *Nurse Education Today,* 39, 163-169. Retrieved from https://doi.org/10.1016/jnedt.2016.02.006

Spijkerman, M., Pots, W., & Bohlmeijer (2016) Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials. *Clinical Psychology Review,* 45, 102-114. Retrieved from https://doi.org/10.1016/jcpr.2016.03.009

Sreeramareddy, C., Shankar, P., Binu, V., Mukhopadhyay, C., Ray, B., & Menezes, R. (2007) Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Medical Education,* 7(26). DOI: 10.1186/1472-6920-7-26

Stewart, S., Betson, C., Marshall, I., Wong, C., Lee, P., & Lam, T. (1995) Stress and vulnerability in medical students. *Medical Education,*29(2), 119-127. Retrieved from https://doi.org/10.1111/j.1365-2923.1995.tb02814.x

Stewart-Brown, S. & Janmohamed, K. (2008) Warwick-Edinburgh Mental Well-being Scale (WEMWBS) User Guide 1 Version 1. Retrieved from ocagingservicescollaborative.org

Steyn, B., Steyn, M., Maree, D., & Panebianco-Warren, C. (2016) Psychological Skills & Mindfulness Training Effects on the Psychological Wellbeing of Under-Graduate Music Students: An Exploratory Study. *Journal of Psychology in Africa,* 26(2), 167-171. DOI: 10.1080/14330237.2016.1163906

Stutts, L., Leary, M., Zeveney, A., & Hufnagle, A. (2018) A longitudinal analysis of the relationship between self-compassion and the psychological effects of perceived stress. *Self and Identity*,17(6), 609-626. DOI: 10.1080/15298868.2017.1422537

Tam, W., Lo, K., & Pacheco, J. (2019) Prevalence of depressive symptoms among medical students: Overview of systematic reviews. *Medical Education,* 53, 345-354. Retrieved from https://doi.org/10.1111/medu.13770

Taylor, A., Leslie, S., & Boddie, K. (2017) Promoting mental wellbeing in Young People Aged 12-18: Opportunities for Design. Accessed 04 January 2021 at http://dx.doi.org/10.14236/ewic/HC12017.33

Tempski, P., Bellodi, P., Paro, H., Enns, S., Martins, M., & Schraiber, L. (2012) What do medical students think about their quality of life? A qualitative study. *BMC Medical Education*, 12(106). Retrieved from http://ww.biomedcentral.com/1472-6920/12/106

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., … Stewart-Brown, S. (2007) The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): development and UK validation. *Health and Quality of Life Outcomes*, 5(63) Retrieved from www.ncbi.nim.nih.gov/pmc/articlaes/PMC2222612

Thabane, L., Ma, J., Chu, R., Cheng, J., Ismaila, A., Rios, L., … & Goldsmith, C. (2010) A tutorial on pilot studies: the what, why and how. *BMC Medical Research Methodology,* 10(1). Retrieved from http://www.biomedcentral.com/1471-2288/10/1

Tin Maung Maung, Y. (2017) Third Year Medical Students' Perceptions of the "Values in Healthcare" Selective Module on their Mental Wellbeing: A Pilot Study from Sefako Makgatho Health Sciences University (SMU) Retrieved from scholar.sun.ac.za/handle/10019.1/100850

Toprak, S., Cetin, I., Guven, T., Can, G., & Demircan, C. (2011) Self-harm, suicidal ideation and suicide attempts among college students. *Psychiatry Research,* 187, 140-144. Retrieved from https://doi.org.10.1016/j.psychres.2010.09.009

Torgerson, D., & Torgerson, C. (2008) Designing Randomised Trials in Health, Education and the Social Sciences: An Introduction. United Kingdom: Palgrave MacMillan.

Tracy, S. (2010); Qualitative Quality: Eight “Big-Tent” Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16(10), 837-851. DOI:10.1 177/1077800410383121 http://qix.sagepub.com

Tyssen R., Vaglum, P., Gronvold, N., & Ekeberg, O. (2001) Suicidal ideation among medical students and young physicians: a nationwide and prospective study of prevalence and predictors. *Journal of Affective Disorders*, 64, 69-79. Retrieved from https://doi.org/10.1016/50165-0327(00)00205-6

Van der Walt, S., Mabaso, W., Davids, E., De Vries, P. (2020) The burden of depression and anxiety among medical students in South Africa: A cross-sectional survey at the University of Cape Town. *South African Medical Journal,* 110(1), 69-76. Retrieved from https://doi.org/10.7196/SAMJ.2020.v110il.14151

Van Niekerk, L., Scribante, L., & Raubenheimer, P. (2012) Suicidal ideation and attempt among South African medical students. *South African Medical Journal*, 102(6), 372-373. Retrieved from ISSN 2078-5135

Van Zyl, P., Joubert, G., Bowen, E., du Plooy, F., Francis, C., Jadhunandan, S., Fredericks, F., & Metz, L. (2017) Depression, anxiety, stress and substance use in medical students in a 5-year curriculum. *African Journal Health Professions Education*, 9(2), 67-72. DOI:10.7196/AJHPE.2017.v9i2.705

Vivian, L., Naidu, C. Keikelame, M., & Irlam, J. (2011) Medical Students’ Experiences of Professional Lapses and Patients’ Rights Abuses in a South African Health Sciences Faculty. *Academic Medicine*, 86, 1282-1287. DOI: 10.10971ACM.0b013e31822be4b8

Wahbeh, H., Svalina, M., & Oken, B. (2014) Group, One-on-One, or Internet? Preferences for Mindfulness Meditation Delivery Format & their Predictors. *Open Medicine Journal,1,* 66-74. DOI: 10.2174/1874220301401010066

Wahbeh, H., & Oken, B. (2016) Internet Mindfulness Meditation Intervention for the General Public: Pilot Randomised Controlled Trial. *JMIR Mental Health*, 3(3). e37. DOI: 10.2196/mental.5900 PMID: 2750 2759 PMCID: PMC 499 3863.

Warnecke, E., Quinn, S., Ogden, K., Towle, N., & Nelson, M. (2011) A Randomised Controlled Trial of the effects of mindfulness practice on medical students' stress levels. *Medical Education*, 45, 381-388. Doi:10.1111/J.,1365-2923-2010.03877x

Warnecke, E., Ogden, K., Bentley, M., & Nelson, M. (2017) 5-Year Follow-up of a randomised controlled trial of the effects of mindfulness practice on medical practitioners' stress. MedEd Publish, 6 (1), 49. Retrieved from https://doi.org/10.15694/mep.2017.000049

Warren, R., Smeets, E., & Neff, K. (2016) Self-criticism and self-compassion: Risk and resilience Being compassionate to oneself is associated with emotional resilience and psychological wellbeing. *Current Psychiatry*, 15(12), 18+. Retrieved from https://link.gale.com/apps/doc/A474714850/AONE?u=27uos&sid=AONE&xid=43311f5a

Whitesman, S., & Mash, B. (2016) Examining the effects of a mindfulness-based distance learning professional training module on personal & professional functioning: a qualitative study. *BMC Medical Education,* 16,287. DOI 10.1186/s 12909-016-0810-2.

Williams, M., & Penman, D. (2011) Mindfulness a practical guide to Finding Peace in a Frantic World. Great Britain: Piatkus.

Wilson, D., Warton, C., & Louw, G. (1998) Stress, Anxiety and Academic Performance among Medical Students at the University of Cape Town. *Southern African Journal of Child and Adolescent Mental Health*, 23-31. Published online 2010 Retrieved from https://DOI.org/10.1080/16826108.9632343

World Health Organisation (WHO) (2018) Mental Health: Strengthening our response. Retrieved from who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

World Health Organisation (WHO) (2020a) Coronavirus disease (COVID-19) pandemic. Retrieved from https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov

World Health Organisation (WHO) (2020b) Statement by WHO Regional Director for Europe at an emergency meeting of ministers of health from the WHO European

Region on COVID-19 projections for the winter season. Retrieved from https://www.euro.who.int/en/media-centre/sections/statements/2020/statement-covid-19-taking-stock-and-moving-forward-together/_nocache

Wu, G., Feder, A., Cohen, H., Kim, J., Calderon, S., Charney, D., & Methe, A. (2013) Understanding resilience. *Frontiers in Behavioral Neuroscience*, 7(10). DOI: 10.3389/fnbeh.2013.00010

Young, C. (2009) The CORE-OM intake norms of students attending a South African university counselling service: a comparison with UK counselling data. *British Journal of Guidance & Counselling*, 37(4), 473-483. Retrieved from https: //doi.org/10.1080/03069880903

Yussuf, A., Issa, B., Ajiboye, P., & Buhari, O. (2013) The correlates of stress, coping styles and psychiatric morbidity in the first year of medical education at a Nigerian University. African *Journal of Psychiatry*, 16(3), 206-15. DOI: http://dx.org/10.4314/ajpsy.v16i3.28

Yusufov, M., Nicoloro-SantaBarbara, J., Grey, N., Moyer, A., & Lobel, M. (2018) Meta-Analytic Evaluation of Stress Reduction Interventions for Graduate and Undergraduate Students. *International Journal of Stress Management,* 26(2), 132-145. Retrieved from http://dx.doi.org/10.1037/str000099

Zwack, J., & Schweitzer, J. (2013) If Every Fifth Physician Is Affected by Burnout, What about the Other Four? Resilience Strategies of Experienced Physicians. *Academic Medicine*, 88(3). DOI:10.1097/ACM.0b013e318281696b

APPENDIX 1: PROGRAMME 1 Mindfulness

SESSION	THEME	CONTENT	PRACTICES	HOME PRACTICE
One	Waking up to Autopilot	Welcome Raisin Exercise	The Pause Feet on the Floor Raisin Exercise Breath and Body	• Formal (FP): Breath and Body • Informal (IF): Mindful snack Mindful routine
Two	Keeping the Body in Mind	Welcome Home Practice Review Hot cross bun of emotion	The Pause Feet on the Floor Come to the Breath 50:50 Body Scan Mindful Movement	• FP: Body Scan or Mindful Movement • IP 50:50 awareness Positive experience with hot cross bun diagram
Three	Moving beyond the Rumour Mill	Welcome 3SBS Home practice review: Activity: Walking down the street	The Pause Coming to The Breath 50:50 awareness Sounds & thoughts	• FP: 3SBS Breath & body +/or Sounds & thoughts practice. • Informal Practice: Mindful walking Mapping out a negative experience on the hot cross bun diagram
Four	Turning towards Difficulty	Welcome Home practice review Intro to Exploring Difficulty	Exploring difficulty 3SBS + including the difficult	• FP: Body and Breath (4) &/or Exploring difficulty 3SBS + including the difficult • The Guest House
Five	Practising Kindness	Welcome Home practice review (brief) Activity: recognising self-critical habits	3SBS + action step Befriending practice Thought on a thread	• FP: Breath & Body (1) Befriending (7) 3 SBS with action step
Six	Your Wild and Precious Life	Welcome Activity: developing balance; nourishing vs depleting activities Review of themes Reflect – what has helped? What can be useful going forward? Poem: Walk Slowly (Dana Faulds	50:50 as we listen to each other sharing 3SBS with action step Share resources for practising daily mindfulness	

APPENDIX 2: EXAMPLE OF MINDFULNESS SESSION 5 SUMMARY

19 October 2020

Hello Everyone

Thank you for joining the session today. The theme of this fifth session is: 'Practising Kindness'.

We began with a short practice – 'Coming to the breath with Kindness' which introduced the theme of this session and the possibility of opening gently to our experience of being here in this session together.

Reflecting on our home practice this past week, at times when asked to notice thoughts coming and going, the challenge is that thoughts disappear completely – and then we might find ourselves trying to look for thoughts/ making them up engaging with 'doing' rather than allowing thoughts to come and go like clouds across a sky. The practices with the anchor points of the breath, body and sounds are easier to focus on than those involving focusing on thoughts. This is ok, it's not a problem – it's part of the practice of building the mindfulness muscle. Be gentle and kind to yourself as you continue on your mindfulness journey learning and exploring.

Another challenge was bumping up against intense body sensations – either because the body is not used to sitting still for periods of time or because it has an injury which becomes intensified in the practice's stillness. With intense pain pulling for attention, is it possible to let go of the audio and focus on the intensity (the difficulty) – moving up close, exploring width, length, texture, pressure, sensation – perhaps breathing into/out from the area & noticing whether this shifts & changes the sensations or whether they stay the same. Then returning to the anchor point of the breath. A reminder, too, that it's always ok to move to ease body tension – noticing the intention to move, the move and then the aftereffects of that movement before continuing with the practice.

The scenario in which we were asked to consider how we would feel if we had underprepared for something provides an opportunity to notice self-critical habits of self-judgment as well as the harsh emotions of shame and guilt and their effects on our body sensations and

behaviour. It is possible to notice that inviting an attitude of kindness towards ourselves, can transform things.

The longer formal practice of the session was a Befriending Meditation which is introduced as an invitation to cultivate a friendly and kind attitude and offer phrases of well- wishing to ourselves and others.

During the practice we offered the phrases to ourselves, a loved one, a stranger, a difficult person and all beings. Initially offering the phrases to ourselves feels awkward and clumsy and it was generally easier to offer the phrases to everyone other than ourselves. But a warm-hearted generosity which arises towards them, is more noticeably easier to offer towards ourselves at the conclusion of the practice. Believing the offering of phrases to others (loved ones and strangers) with a sensation of warm fuzziness, was easier as one would want this for them and as the practice progressed, the repetition of the words became relaxing, more natural.

It is possible to repeat a phrase and then notice how the body is responding – remembering an attitude of kindness and non-judging as these sensations are explored. If there is a sense of overwhelm when offering the phrases to self, it's ok to return to the sensations of the breath and the body, reconnecting with an anchor point. It's ok too, if there is a need for an additional anchor, to open eyes and look around the room, naming whatever is there to be seen in that moment.

Although the practice may feel awkward to begin, becoming aware of this discomfort is an opportunity to notice this discomfort or challenging cognitive reactive patterns and to explore responding skilfully to them. It is normal to experience some resistance or aversion in this practice (called backdraft) and these highlight the obstacles faced when introducing kindness and compassion – **is it possible to relate to them in a mindful way so as not to be ruled by them?**

If you would prefer, adjust the phrases to name what you would best wish for yourself and others with regard to well-being.

We concluded with a 'Thought on a thread' practice initiated by Trish Bartley in her work with patients with HIV in the KZN midlands. (Please see script included). A little bracelet can be

used as a reminder to practice mindfulness and/or connect with others who may be suffering. Alternatively, a little stone or marble can be carried in a pocket as an alternative reminder.

Please note that the additional information includes a 3SBS with an action step – we will practice this next week.

If you have any questions or need additional support during this time, you are welcome to contact me.

Next week we meet for our sixth and final session of the programme.

Have a great week.

Sincerely

Nikki

APPENDIX 3: EXAMPLE MINDFULNESS HOME PRACTICE CALENDAR

Home Practice Calendar **Session 1**

1. **Mindfulness of Body and Breath** **(1x per day)**

   https://assets.penguinrandomhouse.com/wp-content/uploads/2018/08/30141413/01-Meditation-1-Mindfulness-Of-Body-And-Breath-11.mp3

2. **The Pause**
3. **Feet on the Floor**
4. **Eating a snack mindfully**
5. **A routine activity practiced mindfully**

Make a comment/observation each time you practice –

- With informal practices like eating a snack mindfully or bringing focused awareness to a daily activity – noticing how playing close attention affected the experience, if at all.
- With the formal practice, Breath & Body Meditation - what did you become aware of/ if anything? What do you make of this?

Day/date	Practice	Comment &/ observation
	Breath & Body (1) The Pause Feet on Floor Mindful eating Routine activity	
	Breath & Body (1) The Pause Feet on Floor Mindful eating Routine activity	
	Breath & Body (1) The Pause Feet on Floor Mindful eating Routine activity	
	Breath & Body (1) The Pause Feet on Floor Mindful eating Routine activity	
	Breath & Body (1) The Pause Feet on Floor Mindful eating Routine activity	
	Breath & Body (1) The Pause Feet on Floor	

	Mindful eating Routine activity	

A Journal:

A space to reflect… to ponder… to record and comment on what you are noticing… if you wish.

APPENDEX 4: PROGRAMME 2 Supportive Counselling

SESSION	THEME	CONTENT	SKILLS	HOME PRACTICE
One	Introduction to Stress	An Introduction to stress	Stress wheel Awareness triangle	Map out a stressful experience during the week using the awareness triangle
Two	Anxiety	What is anxiety?	Managing Anxiety • Progressive Muscle Relaxation	Practice one of the tools
Three	Sadness	What is sadness?	Managing Sadness • Expressive writing	Practice using one of the tools from this week.
Four	Anger	What is anger?	Managing Anger • Communication genogram	Practice using communication tips in a challenging conversation
Five	Happiness	What is happiness?	Increasing Happiness • Identification of goals & values	Complete the values map.
Six	Conclusion	Compare stress wheels from session 1 & 6 – change?	Relevance & benefit of tools	

APPENDIX 5: EXAMPLE SUPPORTIVE COUNSELLING SESSION 2 SUMMARY

30 September 2020

Hello Everyone

Thank you for being present for our second session together.

Feelings are a unique combination of perceptions, thoughts, beliefs and past experiences as well as the body's physiology. It is easy to label feelings as good or bad but if we consider the reason for the existence of feelings – which is to give us useful and important information. This information might be about our relationships, our emotional needs or level of safety.

During this session we looked at 'anxiety' and its relationship to fear. Although fear is a useful and natural alarm system (like a barking dog warning us that there might be a threat to our wellbeing), anxiety is triggered when we feel frightened, and we don't think we'll be able to cope with whatever it is that is being perceived as threatening. It is future based and usually identifiable by 'What if…?' questions.

We used the awareness triangle to become aware of a situation in which anxiety arose – mapping out thoughts, feelings and body sensations related to the experience.

In response to reducing physiological arousal we experienced a progressive muscle relaxation exercise. This technique is effective if you feel anxiety physically (jaw muscle tension, tightness in shoulders or lower back) and is effective in helping with insomnia.

Some guidelines:

- Unless you experience overwhelming negative thoughts during the exercise or some of the muscles focused on, have been injured and the exercises are painful, this relaxation technique can be used by most.
- Practising at the same time and place, daily can be helpful.
- Avoid doing the technique after a meal.
- Make sure that you're warm & comfortable and won't be interrupted (perhaps silencing the phone for the time)
- Don't worry about performance – the aim is to relax!

- Regular daily practice can assist with general levels of anxiety.

If you would like to continue to practice this over the course of this week, please find herewith a link to this on Youtube: https://www.youtube.com/watch?v=ihO02wUzgkc

Or alternatively, you could record the script yourself, reading the script if you would prefer to use this instead (see attached).

An indicator of anxiety is the presence of stressful automatic thoughts and the harsh voice of the negative inner critic. In order to address this mind-based component of anxiety, we considered '4 steps 4 responding to anxiety' (see attached): becoming aware of stressful automatic thinking (see attached) and negative self-talk, then directly examining and challenging these aspects incorporating a number of questions. Thereafter, generating alternative thoughts and developing an action plan.

For home practice this week, please use one of the tools (or both!) which we have covered in today's session.

Next week we will spend some time looking at the feeling of 'sadness'.

If you need additional support or have any questions, please contact me via email or whatsapp.

Have a great week.

Sincerely

Nikki

APPENDIX 6: HREC2 Letters of Approval

UNIVERSITEIT STELLENBOSCH UNIVERSITY

Approval Notice

New Application

22/08/2019

Project ID :10389

HREC Reference No: S19/05/104

Project Title: A mindfulness-based intervention for medical students at a large teaching hospital and university in the Western Cape, Stellenbosch Medical Campus, Tygerberg: a pilot randomised controlled trial.

Dear Mrs Nicola Boyd,

The **Response to Modification** received on 08/08/2019 14:08 was reviewed by members of **Health Research Ethics Committee 2 (HREC2) via expedited** review procedures on 22/08/2019 and was approved.

Please note the following information about your approved research protocol:

Protocol Approval Period: This project has approval for 12 months from the date of this letter.

Please remember to use your Project ID **[10389]** and Ethics Reference Number **[S19/05/104]** on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review

Translation of the informed consent document(s) to the language(s) applicable to your study participants should now be submitted to the HREC.

Please note you can submit your progress report through the online ethics application process, available at: Links Application Form Direct Link and the application should be submitted to the HREC before the year has expired. Please see *Forms and Instructions* on our HREC website (www.sun.ac.za/healthresearchethics) for guidance on how to submit a progress report.

The HREC will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Departement of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website https://applyethics.sun.ac.za/ProjectView/Index/10389

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Mr. Francis Masiye,

HREC Coordinator,

Health Research Ethics Committee 2 (HREC2).

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)-REC-230208-010 (HREC2)

Federal Wide Assurance Number: 00001372
Office of Human Research Protections (OHRP) Institutional Review Board (IRB) Number:
IRB0005240 (HREC1)-IRB0005239 (HREC2)

The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects; the South African Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes and Structures (2nd edition).

The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.

UNIVERSITEIT STELLENBOSCH UNIVERSITY

Approval Letter
Amendment

26/06/2020

Project ID: 10389

Ethics Reference No: S19/05/104

Project Title: Feasibility of a mindfulness-based intervention for stress reduction and resilience for medical students in a large teaching hospital and medical campus in the Western Cape: a randomised controlled, comparative trial with supportive counselling.

Dear Ms NICOLA Boyd

Your amendment request dated 18/06/2020 08:36 refers.

The Health Research Ethics Committee (HREC) reviewed and approved the amended documentation through a rapid review process.

The following amendment was reviewed and approved:

1. study site to be online
2. session time to be 90 minutes.
3. Inclusion of Year 2 and Year 6 MBChB students.

For the request of extension of the study for a further year, kindly submit a progress report.

Where to submit any documentation

Kindly note that the HREC uses an electronic ethics review management system, *Infonetica*, to manage ethics applications and ethics review process. To submit any documentation to HREC, please click on the following link: https://applyethics.sun.ac.za.

Please remember to use your project ID 10389 and ethics reference number S19/05/104 on any documents or correspondence with the HREC concerning your research protocol.

Yours sincerely,

Mrs. Brightness Nxumalo
Coordinator: Health Research Ethics Committee 2

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)•REC-230209-010 (HREC2)

Federal Wide Assurance Number: 00001372
Office of Human Research Protections (OHRP) Institutional Review Board (IRB) Number:
IRB0005240 (HREC1)•IRB0005239 (HREC2)

The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the

World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects;the South African *Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition)*; as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes and Structures (2nd edition).

The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.

APPENDIX 7: FLYER CYCLE 3

Mindfulness for Medical Students:

A Pilot Stress Reduction Programme

An invitation:

To participate if you are feeling exhausted, overwhelmed, overloaded, stressed and struggling to maintain a balance in your life.

To learn to more effectively & efficiently manage your stress, improve your resilience.

The Stellenbosch Psychiatry Dept (M.Phil Mindfulness)(HREC 2 ref: S19/05/104) is recruiting Year 2, 3, 4, 5 or 6 Tygerberg Campus, medical student volunteers. The pilot study will be facilitated from August 2020.

Participation will involve*:*

- *Completion of an on-line pre-course assessment.*
- *A willingness to be allocated to one of two groups: mindfulness or supportive counselling.*
- *Attendance at 6 online sessions: once a week for 60 minutes*
- *10-15 minutes of daily practice*
- *Questionnaires completed on-line.*

Study Significance: Worldwide there is a growing awareness of students' increased stress and the negative academic, emotional, health and career consequences related thereto. For South African students, the South African environment provides an additional stress layer and this randomised controlled pilot study aims to investigate the benefit of a six-week mindfulness intervention to increase student wellbeing, self-compassion and resilience to stress when compared with supportive counselling.

To access the on-line pre-course assessment or to learn more, contact Nikki Boyd at nikkiboyd@sun.ac.za (A short information session is available on request)

APPENDIX 8: DEELNEMERINGLIGTINGSBLAD EN-TOESTEMMINGSVORM

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

DEELNEMERINGLIGTINGSBLAD EN-TOESTEMMINGSVORM

TITEL VAN DIE NAVORSINGSPROJEK: Haalbaarheid van ’n intervensie vir stresvermindering en -veerkragtigheid gebaseer op bewustheid vir mediese studente by ’n groot onderwyshospitaal en mediese kampus in die Wes-Kaap: ’n ewekansige, gekontroleerde, vergelykende eksperiment met ondersteunende berading

PROJEK ID: 10389

ETIEKVERWYSINGSNOMMER: S19/05/104

HOOFNAVORSER: Nikki Boyd

ADRES: 8 Prideaux Straat, Rondebosch, 7700

KONTAKNOMMER: 083 303 3598

U word genooi om deel te neem aan ’n loodsondersoek by die Universiteit van Stellenbosch, Tygerberg Mediese Kampus. U word genader as ’n moontlike deelnemer omdat u ’n tweede, derde-, vierde-, vyfde of sesde jaar mediese student is by die Tygerberg Kampus.

Hierdie studie is goedgekeur deur die Gesondheidsnavorsingsetiekkomitee by die Universiteit van Stellenbosch en sal uitgevoer word volgens die etiese riglyne en beginsels van die Departement van Gesondheid (2015) Etiese in Gesondheidsnavorsing.

1. DOEL VAN DIE STUDIE

Die algehele doel van hierdie loodstudie is om te assesseer wat die voordele van ’n intervensie gebaseer op bewustheid ten einde studente se welstand en veerkragtigheid teen stres te optimaliseer in vergelyking met ondersteunende berading. ’n Loodstudie is ’n voorstudie wat

help om ’n groter studie te ontwerp deur prosesse, hulpbronne, bestuur- en wetenskaplike kwessies te toets.

Navorsing dui aan dat mediese studente stres ervaar gedurende hul opleiding. Sommige studies wys daarop dat opleiding in bewustheid studente se welstand verbeter, stres verminder en stresveerkragtigheid verhoog. Daar is tans geen plaaslike studies uitgevoer wat aandui of dit enigsins moontlik is in Suid-Afrika nie.

Ten einde die steekproefgrootte van ’n definitiewe ewekansige, gekontroleerde eksperiment te kan bepaal, assesseer hierdie loodstudie die volgende:

- Deelnemerwerwing en -behoudsyfers
- Deelnemers se tuiswerkpraktyke
- Deelnemers se voltooiing van aanlyn keuringinstrument en metings
- Tyd en hulpbronkapasiteit nodig om data in te samel en analiseer.

2. WAT WORD VAN MY VERWAG?

Die Bewustheid vir Mediese Studente stresvermindering loodsprogram is ’n ses weke lank, groepsopleiding gebaseer op *Mindfulness: A Practical Guide to Finding Peace in a Frantic World* geskryf deur Professor Mark Williams en Danny Penman (2011). Die boek is geskryf vir nie-kliniese en onkerklike populasies, en is afgelei van bewustheid-gebaseerde kognitiewe terapie.

Indien u instem om deel te neem aan hierdie studie (na die voltooiing van ’n self-verslag en aanlyn assessering vir geskiktheid), sal u lukraak toegewys word aan Program 1 of Program 2. U sal gevra word om ses aanlyn sessies by te woon (een per week). Sessies sal 60 minute lank wees. Alhoewel nie therapie nie, aan die begin van die eerste sesie, u sal gevra om die dedeelde sessie-inhoud vertroulik te hou. Daar sal 10-15 minute opsionele daaglikse oefeninge van die weeklikse sessies te oefen.

Beide programme word gefasiliteer deur Nikki Boyd, ’n geregistreerde berader en gesertifiseerde onderwyser van bewustheid-gebaseerde intervensies. U sal aanlynmetings moet voltooi voor die toets, na die toets en 2 maande na die voltooiing van die program.

3. MOONTLIKE RISIKO’S EN ONGEMAK

Alhoewel hierdie intervensies nie geassosieer word met nadelige gebeurtenisse nie, mag daar oomblikke wees waar u ongemak ervaar in verband met stresbeheer. Indien u ter enige tyd hierdie ervaringe as oorweldigend en ontstellend ervaar, word u sterk aangemoedig om dit met die kursus-fasiliteerder te bespreek. Indien u ekstra hulp nodig het, sal u verwys word na u mediese dokter en/of die Studente Welsynsentrum op kampus.

Kontakbesonderhede:

Sentrum vir Studente Berading en Ontwikkeling Tygerberg, by Tygerberg Studentesentrum, 2de vloer, Kamer 3035. Gratis en vertroulike ondersteuningsdienste word aangebied deur verpleegsters, dokters en opvoedkundige/kliniese sielkundiges.

Kampus Gesondheid: Landlyn: 021 938 9590 (08:00-14:30 daagliks)

E-pos: 1wnorval@sun.ac.za

24-uur Krisisdiens: 082 557 0880

Lewenslyn: Landlyn 021 461 1111 (9:30-22:00) of

WhatsApp 063 709 2620 (10:00-14:00)

Suid-Afrikaanse Depressie en Angsgroep (SADAG): 080 055 4433

www.sadag.org

4. MOONTLIKE VOORDELE VIR DEELNEMERS EN/OF DIE SAMELEWING

Verhoogde stresvlakke by studente kan negatiewe akademiese en psigososiale gevolge hê. Die intensiteit van mediese opleiding en kontak met die realiteit van pasiënte se ervaringe van siekte, lyding en dood vererger studente se stresvlakke, en affekteer hul geestelike gesondheid en professionaliteit.

Op ’n persoonlike vlak mag deelname aan hierdie studie u toerus met die vaardighede om u stres te verminder en beheer. Dit mag ’n positiewe impak hê op u akademiese vordering, persoonlike en professionele verhoudings, sowel as u geestelike en fisiese gesondheid.

Die inligting verkry van hierdie studie mag bydra tot mediese studente se persoonlike welstand gedurende opleiding, sowel as positiewe kurrikulum hersiening.

Met verhoogde studentepopulasies en hul afhanklikheid van studentegesondheidsdienste, mag die resultate van hierdie program inligting verskaf wat kan bydra tot ’n groter welstandprogram vir studentepopulasies aan tersiêre instansies in Suid-Afrika.

5. VERGOEDING VIR DEELNAME

Deelnemers sal geen vergoeding ontvang nie.

’n Kopie van die van die finale verslag sal aan u ge-e-pos word.

6. BESKERMING VAN U INLIGTING, IDENTITEIT EN VERTROULIKHEID

Enige inligting wat u deel gedurende die studie en wat u moontlik kan identifiseer as deelnemer sal beskerm word. Die resultate van die studie mag gepubliseer word, maar alle deelnemers se besonderhede sal vertroulik gehou word en anoniem bly. Data rakende die studie sal vernietig word na die aanvaarde vyfjaartydperk.

7. DEELNAME EN ONTREKKING

U kan self besluit of u aan die studie wil deelneem of nie. Indien u inwillig om aan die studie deel te neem, kan u te eniger tyd u daaraan onttrek sonder enige nadelige gevolge. U kan ook weier om op bepaalde vrae te antwoord, maar steeds aan die studie deelneem. Die ondersoeker kan u aan die studie onttrek indien u geestelike of fisiese gesondheid agteruitgaan/versleg, ongeag of dit verband hou met die program. U sal gekontak word deur die fasiliteerder en aangemoedig word om kontak te maak met u Algemene Praktisyn of Kampus Gesondheid (021-938 9590).

8. NAVORSER SE KONTAKBESONDERHEDE

Indien u enige vrae of bekommernisse omtrent die navorsing het, staan dit u vry om in verbinding te tree met die navorser Nikki Boyd by nikkiboyd@sun.ac.za

9. REGE VAN PROEFPERSONE/NAVORSINGSDEELNEMERS

U deelname aan hierdie projek is geheel en al vrywillig. U kan te eniger tyd u inwilliging terugtrek en u deelname beëindig, sonder enige nadelige gevolge vir u. Deur deel te neem aan die navorsing doen u geensins afstand van enige wetlike regte, eise of regsmiddel nie. Indien u vrae het oor u regte as proefpersoon by navorsing, skakel Mev. Brightness Nxumalo Koordineerder van die HREC 2 aan 021: 938 9207 of email: brightness@sun.ac.za .

VERKLARING VAN TOESTEMMING DEUR DEELNEMER

As die deelnemer bevestig ek dat:

- Ek die bogenoemde inligting gelees het en dit geskryf is in ’n taal waarmee ek gemaklik is.
- Ek die kans gehad het om enige vrae te vra en al my vrae beantwoord is.
- Alle kwessies rakende die privaatheid, vertroulikheid en gebruik van die inligting verskaf deur my, aan my verduidelik is.

Deur hieronder te teken, stem ek ---------- (NAAM van DEELNEMER) in om deel te neem aan hierdie loodsondersoek, uitgevoer deur Nikki Boyd (Hoofnavorser)

Handtekening van deelnemer ---------- Datum----------

VERKLARING DEUR DIE HOOFNAVORSER

As die hoofnavorser verklaar ek dat die inligting in hierdie dokument deeglik verduidelik is aan die deelnemer. Ek verklaar ook dat die deelnemer aangemoedig is (en genoeg tyd gegee is) om enige vrae te vra. Daarbenewens sou ek graag die volgende opsie wou kies:

	Die gesprek met die deelnemer was uitgevoer in ’n taal wat die deelnemer magtig is.
	Die gesprek met die deelnemer was uitgevoer met die hulp/bystand van ’n vertaler (wie ’n nie-openbaringsooreenkoms geteken het), en hierdie toestemmingsvorm is beskikbaar in ’n taal wat die deelnemer magtig is.

Handtekening van Hoofnavorser----------

Datum----------

APPENDIX 9: PARTICIPANT INFORMATION AND CONSENT FORM

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF RESEARCH PROJECT: Feasibility of a mindfulness-based intervention for stress reduction and resilience for medical students at a large teaching hospital and medical campus in the Western Cape: a randomised controlled, comparative trial with supportive counselling.

PROJECT ID: 10389

ETHICS REFERENCE NUMBER: S19/05/104

PRINCIPAL INVESTIGATOR: Nikki Boyd

ADDRESS: 8 Prideaux Road, Rondebosch, 7700

CONTACT NUMBER: 083 303 3598

You are invited to take part in a pilot study at Stellenbosch University, Tygerberg medical campus. You are approached as a possible participant because you are a second, third, fourth, fifth- or sixth- year medical student at the Tygerberg Campus.

This study has been approved by the Health Research Ethics Committee at Stellenbosch University and will be conducted according to the ethical guidelines and principles of the Department of Health (2015) Ethics in Health Research guidelines.

1.PURPOSE OF THE STUDY

The overall purpose of this pilot study is to assess the feasibility of conducting a large study to investigate the benefit of a mindfulness-based intervention to optimise well-being and resilience to stress for medical students in comparison to supportive counselling. A pilot study

is a pre-study which helps to design a larger study by testing: processes, resources, management and scientific issues.

Research has shown that medical students experience stress during their training and some studies have shown that training in mindfulness helps to reduce student stress and increase resilience and well-being. There are currently no local studies which have been conducted to show whether this is possible here, in South Africa.

The specific feasibility objectives of this randomised pilot study are:

To assess recruitment and retention rates, participants' compliance with homework practices and compliance with completion of on-line screening tool and measures as well as time and capacity resources to collect and synthesise data from which the sample size of a definitive RCT can be estimated.

2.WHAT WILL BE ASKED OF ME?

The 'Mindfulness for Medical Students: a pilot stress reduction programme' is a six-week, group-based training programme based on 'Mindfulness: A Practical Guide to Finding Peace in a Frantic World' written by Professor Mark Williams and Danny Penman (2011) for non-clinical, secular populations and derived from mindfulness-based cognitive therapy (MBCT).

If you agree to take part in this study, following completion of a self-report, on-line assessment for eligibility, you will be randomly assigned to either Programme 1 or Programme 2 and asked to attend six online sessions, once a week. Sessions will be 60 minutes. Although not a therapy session, at the beginning of the first session you will be asked to maintain confidentiality regarding shared session content. There will be 10-15 minutes of optional daily practice of the weekly session's content.

Both programmes will be facilitated by Nikki Boyd, a Registered Counsellor and Certified Teacher of Mindfulness- Based Interventions. There will be on-line measures for you to complete pre, post-test and 2 months following programme completion.

3.POSSIBLE RISKS AND DISCOMFORTS

Although these interventions are not known to be associated with adverse events, there may be times when you experience uncomfortable moments in relation to stress management.

However, if at any time you find these experiences to be overwhelming and distressing, you are strongly encouraged to discuss this with the course facilitator. If you need extra help, you will be referred to your medical doctor and/or the Student Wellness Centre on campus.

Contact details:

Centre for Student Counselling and Development Tygerberg at Tygerberg Student Centre, 2nd floor, Room 3035. Offers free and confidential support services by nurse practitioner, physicians and educational/clinical psychologists.

Campus Health: Landline: 021 938 9590 (08.00 – 14.30 daily)

Email: 1wnorval@sun.ac.za

24 Hour Crisis Service: 082 557 0880

Lifeline: landline 021 461 1111 (9.30-22.00) or

Whats App 063 709 2620 (10.00- 14.00)

South African Depression and Anxiety Group (SADAG): 080 055 4433

www.sadag.org

4.POSSIBLE BENEFITS TO PARTICIPANTS AND/OR THE SOCIETY

Increased levels of stress for students have negative academic and psychosocial consequences. The intensity of medical training and contact with the reality of patients' experiences of disease, suffering and death exacerbate medical students' levels of stress affecting mental well-being and professionalism.

On a personal level, participation in this programme may provide you with the tools to better manage and reduce your stress. This may have a positive impact on your academic performance, personal and professional relationships as well as your mental and physical well-being.

The results of the study may provide information which may contribute to medical students' personal well-being during training as well as information which can contribute positively to curriculum revision.

With increased student populations and their reliance on student health services, the results of this programme may provide information which can contribute to a wider health wellness programme for student populations in tertiary education in South Africa.

5.PAYMENT FOR PARTICIPATION

There is no financial remuneration for participation in this study.

A copy of the final report will be emailed to you.

6.PROTECTION OF YOUR INFORMATION, CONFIDENTIALITY AND IDENTITY

Any information you share during the study and that could possibly identify you as a participant will be protected. The results of the study may be published but all participants' particulars will be kept confidential and remain anonymous. Data pertaining to the study will be destroyed after the accepted five -year period.

7.PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you agree to take part in this study, you may withdraw at any time without consequence. You may also refuse to answer any questions you don't want to answer and still remain in the study. The researcher may withdraw you from this study if your mental or physical health deteriorates, whether or not it is related to the programme. You will be contacted by the facilitator and encouraged to make contact with your general practitioner or Campus Health (021-938 9590).

8.RESEARCHERS' CONTACT INFORMATION

If you have any questions or concerns about this study, please feel free to contact Nikki Boyd at nikkiboyd@sun.ac.za

9.RIGHTS OF RESEARCH PARTICIPANTS

Your participation in this project is entirely voluntary. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have any questions regarding your rights as a research participant, contact Mrs. Brightness Nxumalo, HREC 2 Co-ordinator on 021: 928 9207 or email: brightness@sun.ac.za.

DECLARATION OF CONSENT BY THE PARTICIPANT

As the participant I confirm that:

- I have read the above information and it is written in a language that I am comfortable with.
- I have had a chance to ask questions and all my questions have been answered.
- All issues related to privacy, and the confidentiality and the use of the information I provide, have been explained.

By signing below, I ---------- (NAME of PARTICIPANT) agree to take part in this pilot study, as conducted by Nikki Boyd (Principal investigator)

Signature of participant ---------- Date----------

DECLARATION BY THE PRINCIPAL INVESTIGATOR

As the principal investigator, I hereby declare that the information contained in this document has been thoroughly explained to the participant. I also declare that the participant has been encouraged (and has been given ample time) to ask any questions. In addition, I would like to select the following option:

	The conversation with the participant was conducted in a language in which the participant is fluent.
	The conversation with the participant was conducted with the assistance of a translator (who has signed a non-disclosure agreement), and with this 'Consent Form' is available to the participant in a language in which the participant is fluent.

Signature of the Principal Investigator----------

Date----------

APPENDIX 10: ONLINE TECHNICAL INFORMATION SHEET

The Mindfulness Student Study – Online Technical Information Sheet

Our online session together can be thought of as just like an-person session – what you would conventionally do within an in-person class, you would do the same in the virtual meeting room. You are visible within a virtual classroom, as if you were attending an in-person meeting.

If you are joining from a public space, please ensure that you use earpods and angle the screen away from public scrutiny in order to maintain the privacy of participants.

Minimum Technical requirements:

- Computer with internet connection, microphone, speakers and ear pods.
- An alternative is to use your phone – you can call in using the number provided on the emailed invitation if your computer experiences difficulties or you can down load the zoom app onto your phone beforehand and join from the phone.
- If you choose to use your phone and not your computer to join the session, please be aware that you will not be able to be put into a breakout room for small group discussions. Instead, you will remain in the main meeting room with Nikki, your host for the session.

Pre-session Checklist:

- Ensure that you have joined www.zoom.us (for free) before the class starts as it will not be possible to offer you technical assistance during the session.
- Watch the video on Zoom.us, 'Join a meeting' in Resources: support.zoom.us/hc/en-us/articles/201362193-How-Do-I-Join-A-Meeting
- Write down the local telephone number from which you can call in if you experience technical difficulties. You won't have video access to the session but you will be able to listen in and contribute to the session in this way.
- Have the access to the link handy so that you can enter the meeting room without difficulty including: Meeting ID and a Password
- Check that your equipment is working – computer, video, microphone and speakers.
- If you are at home, please ask that you have others' support to allow you to participate in this session without interruption.
- Check to see whether you are more comfortable sitting on a chair, or a cushion on the floor. Have a blanket, water, mat, something to eat (if necessary) as well as a pen and paper close to hand so that you don't have to get up and look for this during the session.

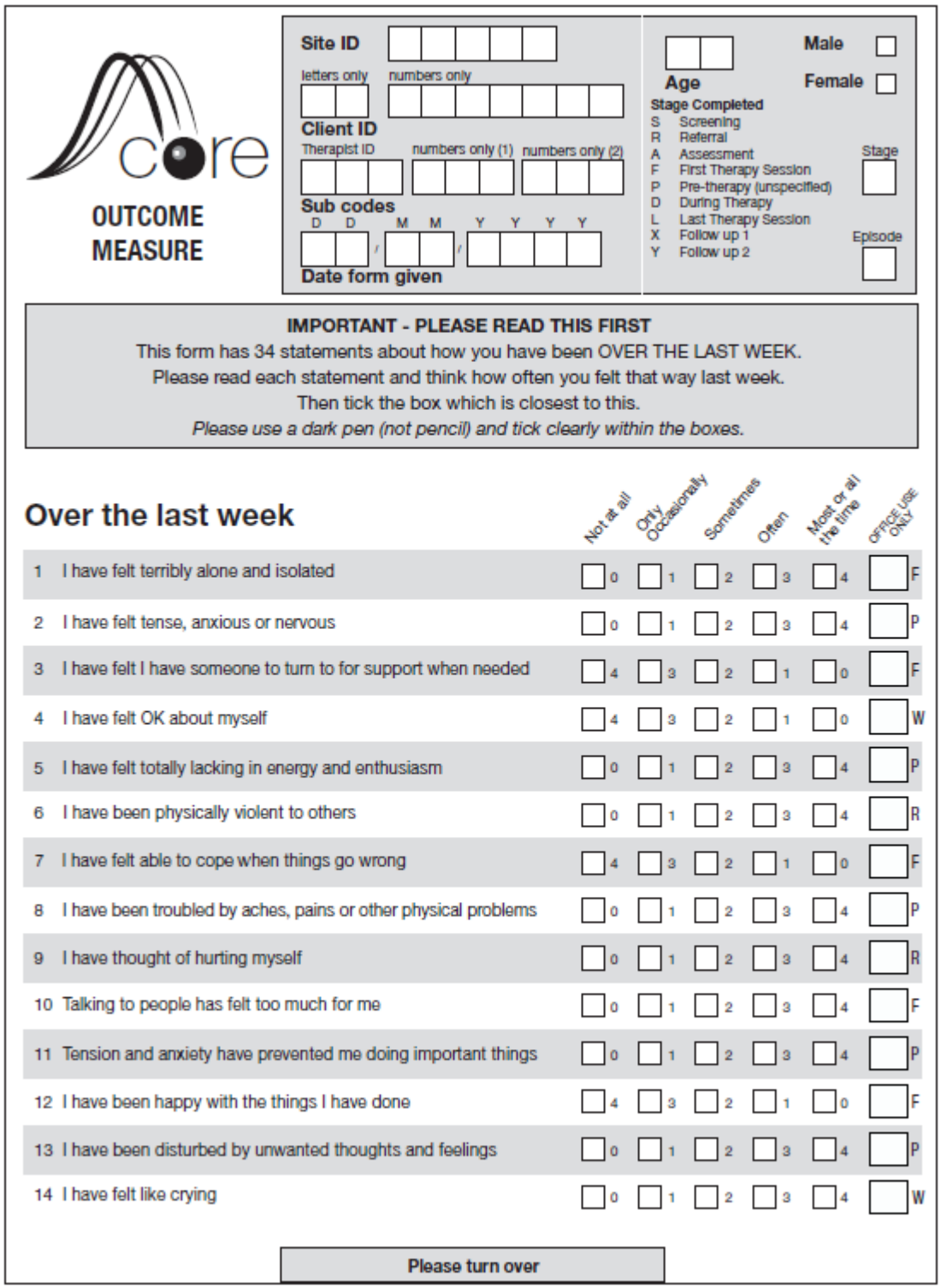
Technical Difficulties:

A reminder that as there may be traffic on the way to attending an in-person class, there may be technical challenges.

- If you do, it helps to sign out and re -sign back in (helpful to have the Meeting ID and Password handy in this instance)
- If you still experience difficulties, you can use the phone number to call in.

Reference: Oxford Mindfulness Centre Finding Peace 2020 Online Technical Information Sheet

APPENDIX 11: CLINICAL OUTCOMES in ROUTINE EVALUATION OUTCOME MEASURE (CORE_OM)



core

OUTCOME MEASURE

Site ID

letters only

numbers only

Client ID

Therapist ID

numbers only (1)

numbers only (2)

Sub codes

Date form given D D / M M / Y Y Y Y

Age

Male

Female

Stage Completed

S Screening
R Referral
A Assessment
F First Therapy Session
P Pre-therapy (unspecified)
D During Therapy
L Last Therapy Session
X Follow up 1
Y Follow up 2

Stage

Episode

IMPORTANT - PLEASE READ THIS FIRST

This form has 34 statements about how you have been OVER THE LAST WEEK.
Please read each statement and think how often you felt that way last week.
Then tick the box which is closest to this.
Please use a dark pen (not pencil) and tick clearly within the boxes.

Over the last week

		Not at all	Only Occasionally	Sometimes	Often	Most or all the time	OFFICE USE ONLY	
1	I have felt terribly alone and isolated	0	1	2	3	4		F
2	I have felt tense, anxious or nervous	0	1	2	3	4		P
3	I have felt I have someone to turn to for support when needed	4	3	2	1	0		F
4	I have felt OK about myself	4	3	2	1	0		W
5	I have felt totally lacking in energy and enthusiasm	0	1	2	3	4		P
6	I have been physically violent to others	0	1	2	3	4		R
7	I have felt able to cope when things go wrong	4	3	2	1	0		F
8	I have been troubled by aches, pains or other physical problems	0	1	2	3	4		P
9	I have thought of hurting myself	0	1	2	3	4		R
10	Talking to people has felt too much for me	0	1	2	3	4		F
11	Tension and anxiety have prevented me doing important things	0	1	2	3	4		P
12	I have been happy with the things I have done	4	3	2	1	0		F
13	I have been disturbed by unwanted thoughts and feelings	0	1	2	3	4		P
14	I have felt like crying	0	1	2	3	4		W

Please turn over

Survey: 151

Page: 1

Over the last week

	Not at all	Only Occasionally	Sometimes	Often	Most or all the time	OFFICE USE ONLY
15 I have felt panic or terror	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
16 I made plans to end my life	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ R
17 I have felt overwhelmed by my problems	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ W
18 I have had difficulty getting to sleep or staying asleep	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
19 I have felt warmth or affection for someone	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0	☐ F
20 My problems have been impossible to put to one side	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
21 I have been able to do most things I needed to	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0	☐ F
22 I have threatened or intimidated another person	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ R
23 I have felt despairing or hopeless	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
24 I have thought it would be better if I were dead	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ R
25 I have felt criticised by other people	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ F
26 I have thought I have no friends	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ F
27 I have felt unhappy	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
28 Unwanted images or memories have been distressing me	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
29 I have been irritable when with other people	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ F
30 I have thought I am to blame for my problems and difficulties	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ P
31 I have felt optimistic about my future	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0	☐ W
32 I have achieved the things I wanted to	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0	☐ F
33 I have felt humiliated or shamed by other people	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ F
34 I have hurt myself physically or taken dangerous risks with my health	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ R

THANK YOU FOR YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

	(W)	(P)	(F)	(R)	All items	All minus R
Total Scores	☐	☐	☐	☐	☐	☐
Mean Scores (Total score for each dimension divided by number of items completed in that dimension)	☐	☐	☐	☐	☐	☐

Survey: 151

Page: 1

APPENDIX 12: WARWICK-EDINBURGH MENTAL WELLBEING SCALE (WEMWBS)

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Below are some statements about feelings and thoughts.
Please tick the box that best describes your experience of each over the last 2 weeks

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

'The WEMWBS was funded by the Scottish Government National Programme for Improving Mental Health and Well-being, commissioned by NHS Health Scotland, developed by the University of Warwick and the University of Edinburgh, and is jointly owned by NHS Health Scotland, the University of Warwick and the University of Edinburgh' (Stewart-Brown, S. & Janmohamed, K., 2008).

APPENDIX 13: PERCEIVED STRESS SCALE (PSS)

PSS-14

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by placing an "X" over the circle representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
	0	1	2	3	4
1. In the last month, how often have you been upset because of something that happened unexpectedly?	○	○	○	○	○
2. In the last month, how often have you felt that you were unable to control the important things in your life?	○	○	○	○	○
3. In the last month, how often have you felt nervous and "stressed"?	○	○	○	○	○
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?	○	○	○	○	○
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	○	○	○	○	○
6. In the last month, how often have you felt confident about your ability to handle your personal problems?	○	○	○	○	○
7. In the last month, how often have you felt that things were going your way?	○	○	○	○	○
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	○	○	○	○	○
9. In the last month, how often have you been able to control irritations in your life?	○	○	○	○	○
10. In the last month, how often have you felt that you were on top of things?	○	○	○	○	○

version: 01/26/2021
PSS-14 1 of 2

PSS-14

	Never	Almost Never	Sometimes	Fairly Often	Very Often
	0	1	2	3	4
11. In the last month, how often have you been angered because of things that happened that were outside of your control?	○	○	○	○	○
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	○	○	○	○	○
13. In the last month, how often have you been able to control the way you spend your time?	○	○	○	○	○
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	○	○	○	○	○

APPENDIX 14: SELFCOMPASSION SCALE-short form (SCS-sf)

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				Almost always
1	2	3	4	5

_____1. When I fail at something important to me I become consumed by feelings of inadequacy.

_____2. I try to be understanding and patient towards those aspects of my personality I don't like.

_____3. When something painful happens I try to take a balanced view of the situation.

_____4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____5. I try to see my failings as part of the human condition.

_____6. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____7. When something upsets me I try to keep my emotions in balance.

_____8. When I fail at something that's important to me, I tend to feel alone in my failure

_____9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____11. I'm disapproving and judgmental about my own flaws and inadequacies.

_____12. I'm intolerant and impatient towards those aspects of my personality I don't like.

APPENDIX 15: FEEDBACK FORM

Mindfulness for Medical Students Feedback Form

Thank you for your participation in this mindfulness-based pilot programme for medical students. It would be appreciated if you could answer the following questions. The information you provide will be used to improve the programme. Your confidentiality will be maintained. Thank you for your feedback.

Name (optional): **Year of study:** **Date:**

Group:

1. What was/were your reason/s for participating in this course? Were they fulfilled?

2. What did you find most helpful? And why?

3. Have you noticed any changes in yourself and/or your relationships with others which you could attribute to your participation? Please explain.

4. Describe any changes in the way you manage stress since participating in this programme?

5a. How many times per **week** did you do the formal practices?

1	2	3	4	5	6

5b. What barriers to completing these practices did you experience?

6a. How many times per **day** did you do the informal practices?

1	2	3	4	5	6

6b. What barriers to practice did you experience?

7. How would you rate this programme with 1 (poor) and 5 (excellent)?

1	2	3	4	5

Any additional feedback/comment?

THANK YOU

APPENDIX 16: COMPARISON OF MEAN AND STANDARD DEVIATION SCORES FOR CORE-Om, WEMWBS, PSS and SCS-sf

	Pre-course	Post course	8- week Follow-up	Normative Data	Normative Data
Core-OM (total) (MI) (SC)	15.73(3.78) 15.31(3.77) 16.47(3.81)	12.77(2.32) 12.40(1.83) 13.44(2.96)	12.63(2.55) 12.41(1.82) 13.02(3.52)	17.89(6.19) Young (2007)	18.2(6.0) Connell et al. (2007)
Total -Risk (MI) (SC)	18.72(4.34) 18.35(4.40) 19.38(4.32)	15.39(2.63) 14.97(1.98) 16.14(3.48)	15.25(3.01) 15.03(2.21) 15.63(4.10)	20.51(6.70)	21.0(6.6)
Wellbeing (total) (MI) (SC)	22.37(5.90) 22.20(5.68) 23.03(6.44)	20.57(3.36) 21.20(3.15) 19.46(3.55)	20.19(3.30) 20.10(2.60) 20.35(4.36)	23.85(8.68)	24.3(8.3)
Problems (total) (MI) (SC)	16.66(6.71) 16.00(6.73) 17.85(6.75)	9.70(4.76) 8.66(4.12) 11.54(5.39)	9.89(5.82) 9.02(4.28) 11.36(7.77)	21.97(7.74)	23.1(7.4)
Functioning (total) (MI) (SC)	19.57(3.66) 19.50(3.95) 19.70(3.23)	19.36(2.41) 19.20(2.13) 19.64(2.90)	18.97(2.34) 19.34(2.38) 18.33(2.22)	17.94(7.00)	18.0(6.8)
Risk (total) (MI) (SC)	1.75(2.62) 1.13(1.97) 2.86(3.30)	0.56(1.72) 0.40(1.69) 0.83(1.82)	0.44(1.00) 0.21(0.75) 0.83(1.27)	5.59(6.54)	4.7(6.1)
WEMWBS (Total) WEMWBS (MI) WEMWBS (SC)	46.45(7.89) 47.79(8.02) 44.0 0(7.30)	53.10 (6.83) 54.08(7.44) 51.30(5.36)	51.59(8.63) 53.00(7.39) 49.00(10.36)	48.31 (8.54) Galante et al. (2018)	
PSS(Total) (MI) (SC)	27.94(7.15) 26.91(7.54) 29.71(6.30)	22.15(5.61) 20.66(5.36) 24.71(5.25)	22.02(7.92) 20.58(6.97) 24.50(9.07	23.67(7.79) Cohen et al. (1983)	23.20(7.25) A 20.93(8.77) B Gonzalez-Ramirez et al. (2012)
SCS-sf (Total) **(MI)** **(SC)**	3.29(0.28) 3.28(0.29) 3.31(0.26)	3.16(0.25) 3.17(0.26) 3.13(0.23)	3.20(025) 3.16(0.25) 3.26(0.24)		
Self-kindness (Total) (MI) (SC)	3.01(0.70) 3.06(0.72) 2.92(0.67)	3.27(0.71) 3.43(0.72) 3.00(0.62)	3.57(0.58) 3.66(0.54) 3.42(0.64)		
Self-judgment (Total)	2.90(0.69)	3.17(0.72)	3.34(0.76)		

(MI)	2.91(0.76)	3.31(0.62)	3.43(0.69)
(SC)	2.89(0.59)	2.92(0.85)	3.17(0.86)
Common humanity (Total)	2.94(0.65)	3.15(0.72)	3.36(0.70)
(MI)	2.97(0.45)	3.27(0.60)	3.45(0.64)
(SC)	2.89(0.92)	2.96(0.88)	3.21(0.80)
Isolation (Total)	2.52(0.82)	3.07(0.93)	3.06(0.87)
(MI)	2.62(0.78)	3.12(1.00)	3.29(0.79)
(SC)	2.35(0.90)	3.00(0.83)	2.67(0.91)
Mindfulness (Total)	3.52(0.67)	3.76(0.63)	3.75(0.69)
(MI)	3.52(0.66)	3.91(0.65)	3.79(0.64)
(SC)	3.53(0.71)	3.50(0.51)	3.67(0.79)
Over-identification	2.28(0.83)	2.98(0.74)	3.07(0.84)
(MI)	2.33(0.89)	3.14(0.65)	3.18(0.79)
(SC)	2.21(0.75)	2.71(0.84)	2.89(0.92)

Abbreviations: (MI) Mindfulness

(SC) Supportive Counselling

APPENDIX 17: THEMES AND SUBTHEMES: Mindfulness Group

Themes	Subthemes	
1.Change in initial stress reaction	Pause and Breathe	Calmer & grounded (N=9; 10,15,17,22,35, 13,12,14,10) Use of resources (N=14; 3,12,15,20, 20,21,22,27, 30,31,40,11,21,38)
	Step back from destructive thought processes: Increase in awareness	Increase in awareness (N=14; 11,18,20,27,30,40, 13,31,33,33,21,12,38,38)
	Acknowledge that I am not my thoughts: regain control	I am not my thoughts (N=18; 13,14,15,17,18,20,20, 21,22,27,30,33,31,37,40, 12,38,38)
2. Positive changes in relationships	Kinder to self	Inner voice less judgmental (N=14; 33,1,1,1,6,10,13,14, 17,20,21,18,40,20) Helped me to care more for myself (N= 4; 33,11,15,31) More conscious (N=9; 31,31,11,20,20,21,34,40,11) Inner voice kinder (N=9; 40,13,15,17,18,21,27,34,6)
	Improved interaction with others	(N= 14; 13,14,15,15,15,15,18, 18,21,22,30,33,34,40)
3.Feeling of a sense of community through course interactions	Normalisation of feelings & experiences	(N=11; 13,27,37,10,11, 20,34,37,12,40,38)
	Supportive Facilitation	Facilitator (N=12; 40,20,12,18,27,37,1,

		20,21,1,17,38) Course structure & content (N=22; 40,40,11,12,20,31, 35,27,27,20,22,30,20,3, 13,27,12,17,30,32,35,1)
4.Time as a barrier to practice	Having time and space	Formal practices (N=22; 3,10,11,12,12,20,15,21, 27,30,33,34,18,20,35,37 17,35,18,30,31,38)
	Making time and building a habit	(N=17; 22,1,17,27,40,10, 10,13,20,20,22,37,6,31, 20,40,38)
	Ease of incorporating informal practices	(N=17; 27,27,20,40,3,14,15, 17,27,10,11,15,15,34,34,18,30)

APPENDIX 18: THEMES AND SUBTHEMES: Supportive Counselling

Theme	Subtheme	
1.Awareness of emotions and reactions	• Awareness triangle was most helpful	N= 9; 4,8,16,36,39,42,19, 16,23
	Awareness improved	N= 11; 4,28,39,7,42,2, 32,8,8,8,36
	Use of tools	N= 3; 8,23,42
2. Change in approach to dealing with emotions: Do not become consumed	Do not be consumed	N=8; 4,29,39,42,5,8,36,32
	Analyse the situation & find solutions	N=8; 4,7,28,29,36,42,8,28
3. Increase in consciousness in relationships with others		N=6; 7,8,16,28,36,42
4.Barriers to engaging with tools	Emotions	N= 5; 2,4,8,8,39
	Time	N= 7; 4,7,8,8,39,42,32

APPENDIX 19: FEEDBACK FORM DATA

	Group							
	Mindfulness				Supportive counselling			
	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum
Number of sessions attended	4	1	0	6	4	1	3	6
No of times per week completed formal practice	3.6	1.3	1.5	6.0	2.3	1.1	1.0	4.0
No of times per day completed informal practice	2.5	1.4	1.0	6.0				
Rating of Programme	4.5	0.6	3.0	5.0	4.5	0.7	3.0	5.0
Rating of resources as helpful	5	0	4	5	4	1	3	5

APPENDIX 20: STELLENBOSCH UNIVERSITY AND CAMBRIDGE UNIVERSITY (Galante et al. 2018) WEMWBS BASELINE AND POST-COURSE SCORES

WEMWBS	N	BASELINE MEAN (SD)	POST-COURSE MEAN (SD)
S.U. (TOTAL)	45	46.45 (7.89)	53.10 (6.83)
MI	28	47.79 (8.02)	54.08(7.44)
SC	14	44.00 (7.30)	51.30(5.36)
C.U. (TOTAL)	614	48.31(8.54)	48.34(9.03)
SAU	307	48.61(8.50)	46.87(9.01)
MSS	307	48.01(8.58)	49.61(8.88)

S.U Stellenbosch University. C.U Cambridge University. MI Mindfulness Intervention. SC Supportive Counselling. SAU Support as Usual. MSS Mindfulness Skills for Students.

APPENDIX 21: COMPARISON BETWEEN STELLENBOSCH UNIVERSITY AND SCF-sf NORMATIVE DATA (Raes et al. 2011)

SELF-COMPASSION SCALE-SF	STELLENBOSCH UNIVERSITY	DUTCH SAMPLE (RAES ET AL, 2011)	ENGLISH SAMPLE (RAES ET AL 2011)
	N= 39	N= 271	N= 452
MEAN AGE(SD)	23(2)	18.14(1.25)	20.62(1.74)
AGE RANGE	19-30	18-28	18-42
MEAN	39.56	48.12	36.00
STANDARD DEVIATION	3.35	11.61	7.33